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ABSTRACT

This document which covers the proceedings of the 1989 International Symposium on Information Technology, begins with several opening ceremony messages and includes the following papers: (1) "Reflections on International Bibliographic Standards" (Winston D. Roberts); (2) "Bibliographic Control from the User's Perspective" (Ruth A. Pagell); (3) "Some Current Problems in International Standard Book Numbers for Bibliographic Control" (Cosette Kies); (4) "CONSER: A Model Cooperative Cataloging Project" (Carolyn Norris); (5) "Information Retrieval in Multimedia Sources in an Electronic Age" (Tze-Chung Li); (6) "A Question of Format" (Alan Hopkinson); (7) "BABINAT: A Meta-Format To Support the Development of National Bibliographic Databases within Cooperative Networks" (M. J. Menou); (8) "Development of Desktop Catalog System for Books" (Shuzo Asakura); (9) "Practical Construction of a Thesaurus: The IFIC Experience" (L. Robles-Austriaco and Ariston G. Trinidad); (10) "Malaysian Official Publishing: Bibliographic Control and Description Standards" (Khoo Siew Mun); (11) "Unified Format for Information Sharing among Libraries at the Los Banos Complex" (Vilma G. Anday); and (12) "Bibliographic Standards of Indonesia" (Dady Rachmananta). Notes on the contributors and a list of the symposium's seven committee members are provided. (SD)

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ED327187

INTERNATIONAL SYMPOSIUM ON

INFORMATION TECHNOLOGY:

STANDARDS FOR BIBLIOGRAPHIC CONTROL

U.S. DEPARTMENT OF EDUCATION
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INFORMATION TECHNOLOGY :
STANDARDS FOR BIBLIOGRAPHIC CONTROL

INTERNATIONAL SYMPOSIUM
ON
INFORMATION TECHNOLOGY :
Standards For Bibliographic control

September 4 - 8, 1989
at Bangkok Palace Hotel, Bangkok

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FOREWORD

Among the Symposium's objectives was the bringing together of library and information experts to exchange knowledge, ideas and experiences in the importance of and necessity for standards of bibliographic control. Another objective was that of allowing the participants to acquire knowledge of advanced information technology. These proceedings are an attempt to capture the realization of these objectives.

It is our hope that these proceedings will serve as an effective tool which promotes closer cooperation among library and information experts in the future and which serves to eliminate the current problems incurred in the library sciences.

It is an honor and pleasure for us to present these proceedings to those who are concerned with the advancement of library services. We would like to express our most heartfelt gratitude to the International Federation of Library Association and Institutions, the United Nations Educational, Scientific and Cultural Organization, the Thai Library Association, Mr. Chow Chowkwanyun and all of the speakers, participants who made the symposium a successful one.

Tomchai Suvarnadat

Chairman of the Organizing Committee

AGENDA

Information Technology : Standards for Bibliographic Control

Organized by

Thammasat University Libraries

Monday, September 4, 1989

Registration

Organizing Committee meeting

Tuesday, September 5, 1989

Registration

Opening Ceremony

"Reflections on International Bibliographic Standards" Winston D. Roberts

"Bibliographic Control from the User's Perspective" Ruth A. Pagell

"Some Current Problems in International Standard Book Numbers for Bibliographic Control" Cosette Kies

"CONSER : A Model Cooperative Cataloging Project" Carolyn Norris

Discussion

Wednesday, September 6, 1989

"Information Retrieval in Multimedia Sources in an Electronic Age" Tze-Chung Li

"A Question of Formats" Alan Hopkinson

Discussion

"BABINAT: A Meta-Format to Support the
Development of National Bibliographic
Data Bases Within Co-operative Network"
M.J. Menou

"Development of Desk Top Catalog System for
Books" Shuzo Asakura

Discussion

Thursday, September 7, 1989

"Practical Construction of a Thesaurus:
The IFIC Experience" L. Robles-Austriaco

"Malaysian Official Publishing: Bibliographic
Control and Description Standards"
Khoo Siew Mun

Discussion

"Unified Format for Information Sharing Among
Libraries at the Los Banos Complex"
Vilma G. Anday

"Bibliographic Standards of Indonesia"
Dady Rachmananta

"Standards for Bibliographic Control:
A National Seminar in Thailand"
Maenmas Chavalit

Discussion

Friday, September 8, 1989

Organizing Committee Meeting

Cultural Visit

OPENING CEREMONY MESSAGES

Report by the Rector of Thammasat University

Professor Krirkkiat Phipatseritham

September 5, 1989

Your Excellency, Distinguished Participants, Ladies and Gentlemen :

On behalf of Thammasat University, the Organizing Committee and distinguished participants, I wish to express our sincere thanks to you for giving us the honor to preside over the opening ceremony of "the International Symposium on Information Technology: Standards for Bibliographic Control" today. I would like to state briefly the background of this symposium.

Nowadays, the development of information technology gives us a great deal of concern. The fast continuing growth of the information in all disciplines makes it impossible for anyone to keep up with all recorded knowledge. Information service professionals are cognizant of this matter and are trying to seek methods to collect, organize and store information systematically so that it can be accessed speedily and easily whenever it is required. One approach that needs to be done is to record lists of documents and use them as a tool to locate appropriate information and deliver it to users in response to their information requests.

These lists of documents are bibliographies which are found in many forms such as the catalogue card, bibliographic database, printed books, etc, have many format variations which cause many problems. This is one of many reasons why concerned persons in information should under-take to understand the existing problems and make every effort to solve them.

Within this context, Thammasat University has organized the International Symposium on Information Technology: Standards for Bibliographic Control with the following main objectives:

1. To bring together library and information experts from foreign countries to exchange knowledge, ideas, and experiences with Thai participants.

2. To urge the concerned persons in the library and information community to be aware of the importance and necessity for standards of bibliographic control.

3. To allow the participants to acquire knowledge of advanced information technology.

The schedule of technical conference will cover the next three days, beginning with the keynote speech by Mr. Winston Robert, resource person from IFLA on the topic "Reflections on International Bibliographic Standards." After that, reports, followed by comments and discusions, will be presented by participants from many countries.

In this symposium, there are 13 distinguished speakers and participants from Asia, Europe and America. The Symposium would be impossible without the financial support from the Ministry of University Affairs, our corporate and personal donors, and technical assistance from IFLA, UNESCO, University Libraries, Library Schools and the National Libraries in various countries.

It is anticipated that :

1. Persons concerned in information services will have good opportunity to exchange their views and cooperate in implementing new techniques in providing effective services for the users;

2. The participants will learn from each other's point of view and establish relationships to organize closer cooperation in the future;

3. The activities so managed will ensure mutual understanding and elimination of all problems involved.

Now, at this auspicious moment, may I invite Your Excellency Tavich Klinpratoom, the Minister of University Affairs, to honor this assembly by delivering your address opening the International Symposium on Information Technology: Standards for Bibliographic Control.

Thank you very much.

OPENING ADDRESS

By the Ministry of University Affairs

H.E. Mr. Tavich Klinpratoom

September 5, 1989

Mr. Rector, Distingished Participants, Honorable Guests, Ladies and Gentlemen :

I feel greatly honoured and priviledged to be presiding over the opening ceremony of the International Symposium on Information Technology : Standards for Bibliographic Control.

I think that there is a great need for those who are in the fields of Library and Information Sciences to meet in an international setting such as this one because we are in the age of global progress in science and technology. This progress is essential in the development of economic and social conditions. However, it also causes an overwhelming growth of information which comes in many forms. Libraries and Information Centers are bringing in new technologies, especially computers, to help in the collection, management and sharing of information. As a result, libraries and information centers need to co-operate and establish universally accepted standards to record and exchange their resources with efficiency and ease.

Here in Thailand, the Ministry of University Affairs has fully realized the importance of such bibliographic standards. In 1986 we set guidelines for record structures for Monographs, Serials, and Non-Printed Materials, using the International Standard Organization

ISO-2709-1981 (E) and The MARC formats.

Needless to say, this gathering of library and information professionals today, already suggests the participants good will and determination to discuss and exchange views, experiences and problems. I sincerely hope that the outcome of this symposium will bring everyone another step closer to the universal standards for bibliographic control which will greatly benefit information users all over the world. On behalf of the Ministry of University Affairs I wish you all every success and a pleasant time.

Therefore, at this auspicious moment, I have the honour to declare the International Symposium on Information Technology : Standards for Bibliographic Control open.

WELCOMING ADDRESS

By the Director of Thammasat University Libraries

Associate Professor Temchai Suvarnadat

September 5, 1989

Your Excellency, Distinguished Participants, Honourable Guests, Ladies and Gentlemen :

It is a great honour for me to be here to welcome you to the International Symposium on Information Technology : Standards for Bibliographic Control. I strongly believe that there is a need for the professionals in the fields of library and information science to get together to discuss the common problems pertaining to the area of bibliographic control, to formulate some common standards or make recommendations for the improvements of the existing ones. Needless to say, the gathering of the participants and speakers at this moment already suggests another step toward better understanding and cooperation among the leading institutions in our fields.

In the face of our rapidly changing and growing world, the need for co-operation among information dispensers has never been greater. We must keep pace with the growth of information in order to make the world smaller and more accessible to our clients. In sharing our resources, we are helping each other to fulfill our professional purposes.

We have at present, honoured speakers and participants from many nations. The West has come to meet the East. Together we shall reach towards the goals which bring us here today.

As chairman of the organizing Committee, I would like to thank you all for making this event possible. I wish you a very pleasant and profitable time. For those who have come from abroad, I hope you will enjoy your visit to Bangkok and take home a thousand smiles.

Thank you very much

NOTES ON THE CONTRIBUTORS

VILMA GENDRANO ANDAY is a Librarian I at the University of Philippines at Los Banos (UPLB). As a student assistant at the UPLB Library, teacher in the UPLB Department of Agricultural Education, and research assistant and UPLB librarian, she has gained experience in the indexing and abstracting of periodicals and the management of serials and database. She received her B.S. degree in Agricultural Education and has had a Post-Graduate Training Course for Science Information Specialists in Southeast Asia, and a Master of Library Science.

DR. SHUZO ASAKURA earned his doctorate degree in Electrical Engineering from Keio University in Japan in 1985. He began his career in 1977 as an Assistant of Electrical Engineering and two years later became an instructor of Computer Science at the Chubu Institute of Technology, a position he held from 1977-1984. Since 1986 he has been an Assistant Professor of Information Sciences at Chubu. He has authored articles on topics such as, A Study on the Rule in Letter Sequences and the Algorithm for Automatic Hyphenation of Words in an English Editor and Automatic Hyphenation of English Words by an (m,n) Letter Sequence Algorithm and Its Evaluation.

ALAN HOPKINSON is experienced in library automation and cataloguing standards and has been a consultant in developing countries for UNESCO, FAO and WFP. From 1975-1977 he worked in Bibliographics at the British Library and switched to the B.L. RAD Department (INIBID) in 1977. He held that post until 1981 when he joined the B.L. UNIMARC project for two years. Currently he is the Information Systems manager at the Institute of Development Studies in Sussex, UK. His articles and writings reflect his interest in bibliographic control, data exchange standardization, data formating, the MERLIN system and other processors of bibliographic materials and databases. He holds a M.A. from Oxford, a Dip. Lib. (London) as well as an A.L.A. and M.B.C.S.

SIEW MUN KHOO possesses a B.A. and Master of Economics from Malaya and a Dip. Lib. (London) and an A.L.A. She began her work experience in 1961 as a research assistant to the Department of Economics, University of Malaya. After two years she became a tutor for the same department and then held the post of editor for the University of Malaya Press from 1966-1967. She moved on to · become a bibliography decumentation and research assistant to the Faculty of Economics and Administration, a job she held until she became Deputy Librarian at the university in 1975. Since then she has moved up in the library system and now serves as the Chief Librarian. Her writings have included recent publications involving the economics of library systems.

DR. COSETTE NEIL KIES has an academic background that includes M.A. Degrees in Art History and Library Science from the University of Wisconsin-Madison, and D.L.S. (Library Service) degree from Colombia University. During his career he has served in professorships at Peabody College and Vanderbilt University, Asst. Director of the Ferguson Library, Stamford, Conn., and library consultant to the Illinois State Library, the American Library Association, and the University of Nebraska Libraries. She also was a Fulbright-Hays scholar at the Universidade Federal de Ninas Gerais, Brazil and presently she is the Chair of the Department of Library and Information Studies at Northern Illinois Library. She has written a variety of publications, many of them dealing with library marketing and public relations.

DR. TZE-CHUNG LI graduated *cum laude* with a LL.B. from Soochow University, China. He later earned a M.C.L. from Southern Methodist University, a LL.M. from Harvard University and a MSLS from Colombia. He culminated his studies with a doctorate from the New School for Social Research. His association with Rosary College began in 1966 when he became an assistant professor of Political Science and Library Science. As he worked his way up to full professor he held various positions, such as Chairman of the Graduate Institute of Library Science, Director of the National Central Library, and Dean of Rosary College GSLIS. He also has been a visiting law professor to universities in Taiwan and China. As a writer in both English and Chinese, his writings have covered the fields of law, land economics, political science, and library science, with an emphasis on referencing, information retrieval, information sharing and standardization.

MICHEL J. MENOU received from the University of Paris Institute of Political Studies a Master in Public Administration and later from the School of Higher Studies in Social Sciences, a post graduate diploma in Information Science. Since 1966 he has served mostly as a free lance consultant, working on the development of information systems in some 60 countries. His expertise is in the areas of information program design, planning and implementation at the national and international level as well as establishing documentation centers and national data bases, plus curriculum development teaching and training. Currently he is on the editorial boards of Information Processing and Management, Information Development and Informediary. He is an active member of several library and information service organizations in France and the United States.

CAROLYN NORRIS holds a B.A. in History from Wittier College and a M.L.S. from UCLA (1981). She served as a Public Service Librarian at Mount St. Mary's College for three years where she was responsible for serials, reference and circulation. In 1984, she accepted a position as an English teacher at Peking University and she taught in the English Department and library for two years. She continued to work in Beijing for Kanskey Associates and served as the Baker and Taylor account representative. In January of 1987, she joined EBSCO as a Sales Representative and is now based in Hong Kong.

RUTH A. PAGELL, an American Library Association-USIS Library/Book Fellow, is currently serving as a consultant at the Asia Institute of Technology in Bangkok. Since 1981 her experience has included managing public service functions, supervising staff, planning and integration of new technologies, coordinating online service, the training of staff and users, as well as teaching college and graduate students. She performed these services at the Lippincott Library (Wharton School, University of Pennsylvania), Drexel University's libraries and College of Information Studies, and the Wharton Evening School. She has given various presentations on CD-ROM, National

Online, training End-User Searchers, microcomputer applications, and library management, as well as writing several publications on database and user searches. She holds a M.B.A. in Marketing and a M.A. in Library Science from Drexel University, a M.A. in Teaching from the University of Massachusetts, and an A.B. cum laude in Psychology and Economics from Jackson College.

DADY P. RACHMANANTA is the Assistant Librarian at the National Library of Indonesia. He is also the Chief Editor of the Indonesian National Bibliography. He graduated with a M.L.S. from the University of Hawaii in 1987.

WINSTON DIGBY ROBERTS is a Programme Officer at the IFLA Universal Bibliographic Control and International MARC Programme (UBCIM). From 1971-1976 he taught English in France and then joined the British Library Document supply Centre as a trainee in 1976. He then re-joined BLDSC as a cataloguer and senior library assistant in 1979. After three years he moved to the BL Humanities & Social Sciences (London) as a cataloguer, a post he held until appointed to the BL Bibliographic Services' Marketing and Support Group in 1985. In 1987 he was appointed the IFLA UBCIM Programme. Throughout these years he has gained experience in cataloguing, reference and public enquiry work, online searching and editing and producing IFLA standards. His publications and papers are mainly concerned with the area of bibliographic control. He graduated with a M.A. in French (University of Canterbury, New Zealand), a diploma in A-V teaching methodology (University of Poitiers, France), and a M.A. in Librarianship (University of Sheffield, U.K.)

LILIA S. ROBLES-AUSTRIACO has a B.S. in Civil Engineering and a Master of Engineering major in Structural Engineering. In the Philippines she has worked as a civil engineer for the Bureau of Public Works and was an Associate Professor at Mapua Institute of Technology. She has also been a lecturer in Malaysia at Universiti Sains Malaysia. Currently she manages the International Ferrocement Information Center and the Asian Geotechnical Engineering Information Center at the Asian Institute of Technology in Bangkok, Thailand. She also edits the Journal of Ferrocement and Age News as well as serving as Course Director for Information Technology and Computerized Library Services.

REFLECTIONS ON INTERNATIONAL BIBLIOGRAPHIC STANDARDS

W. ROBERTS

IFLA UBCIM Programme, British Library, London, U.K.

p. XVII

Abstract

There are now question marks over many bibliographic standards developed over the past 20 years, and librarians should consider how standards might evolve. A brief overview is given of the aims of Universal Bibliographic Control (UBC), and then of some assumptions common to much standardisation work of recent years inspired by the concept of UBC. Current economic and technological developments influencing library standards are discussed, and their relevance to both industrialised and developing countries. Technical developments include retrospective conversion, OPACs and CD-ROMs.

It is considered that the technological gap between North and South is growing, and possible ways to overcome this are discussed. These include the strengthening of national information policies, professional training and automation on an appropriate scale.

Suggestions are made as to how the various producers of bibliographic standards should react. Possibilities for specific projects in the area of bibliographic control are listed, and suggestions made for closer cooperation among national and regional associations of information professionals. New developments in bibliographic control can also help the less developed countries to gain access, through their own libraries, to elements of their own cultural heritage contained in libraries abroad. IFLA is in a position to help maintain and develop technical standards, and to mediate between professional information workers from different cultures.

REFLECTIONS ON INTERNATIONAL BIBLIOGRAPHIC STANDARDS

W. ROBERTS

IFLA UBCIM Programme, British Library, London, U.K.

1. Introduction

The title of this paper can be interpreted in two ways - I hope to give you not only my personal reflections, which are necessarily subjective, but also to indicate some of the ways in which I consider that the technological and economic environment reflects on the standards we have developed and affects the ways in which these are put to practical use.

The concept of a "standard" in the field of information work (both in librarianship and in information science), is somewhat ambiguous. It is clear that, for one group of professional information workers, the term "standard" covers codes of cataloguing rules, classification schemes and various other documents containing recommendations for good library practice, all of which are subject to varying interpretation; whereas for another group of professionals, standards are extremely precise technical specifications for communication between software and machines in an automated information processing environment. (Some people, in fact, call these categories "soft" and "hard" standards).

In particular, from the point of view of promoting international bibliographic control, "bibliographic standards" are those documents disseminated across national (and sometimes even cultural) borders, which define the working practices agreed on after international discussion aimed at systematising and improving both the creation of bibliographic information by national and other agencies and the *distribution* of this information.

At its simplest, bibliographic control can be defined as a system for recording and describing library materials in a catalogue or database which facilitates access to these materials in a library or documentation centre. (Bibliographic control should be distinguished from the much broader concept of "universal bibliographic control" (UBC) which I will discuss later.) Bibliographic control implies the use of agreed standards and procedures. It is not a philosophy nor an end in itself. When applied at national or international level, it is a practical idea with profound economic and social implications, in that it allows us to avoid duplication of human effort and the waste of scarce resources. In the long term, it contributes to cultural and economic development by making scientific information rapidly and efficiently available.

There are now many questions being asked about bibliographic standards developed in the industrialised countries over the last 20 years. Questions arise not only from professional experience in the actual operation of these standards (experience which normally leads to their amendment and refinement) but also from the changing environment in which libraries world-wide are having to operate. I am referring to changes in levels of literacy, the extension of educational opportunities, the increasing power of the publishing and communications industry, and the increasing sophistication of the software and hardware available to libraries and information centres. All of these are of course factors in the drive for greater cost-effectiveness and higher productivity, which is leading some libraries to question the standards which have been so painstakingly developed.

In this paper, I will be concerned to discuss these matters largely from the point of view of IFLA (the International Federation of Library Associations and Institutions). I intend first of all to pick out some of the themes and assumptions underlying recent efforts to develop standards for libraries and the concept of Universal Bibliographic Control (UBC), promoted by IFLA. I will consider what questions we should be asking about the aims of standardisation work and its role in the international flow of information. I will discuss some of the current trends changing the way in which standards are applied in libraries and documentation centres and also changing the way in which these standards are perceived (by staff and - more importantly? - by users). I will suggest how producers of bibliographic standards might react. Finally, I will consider how professional information workers in industrialised and developing countries might better collaborate, and suggest how professional associations (including IFLA) could play a greater role in bringing them together.

2. The current scene.

2.1 The development of current library standards.

Since the middle years of this century, the output of publications in the developed countries has reached proportions so enormous as to put great strain on the capacity of national bibliographic agencies (and indeed all academic and public libraries) to acquire, catalogue and make them available to their customers. (Indeed, this is now leading some national libraries seriously to question the *need* for them to retain all the national imprint.) Similarly, the tremendous growth in scientific journal publishing has inflated the databases of the major abstracting and indexing services. Over the same period, from the late 1950s, computers came more and more into use in business, industry, public administration and higher education. It was natural that the 1960s and 1970s should have witnessed the growing application of this computing power to the various stages of technical processing in libraries, and to the provision and exchange of machine-readable records by libraries and by secondary services.

At the same time, there was a movement within the library profession towards rationalisation of the cataloguing standards underpinning bibliographic work. A major manifestation of this was the International Conference on Cataloguing Principles (ICCP), held in Paris in 1961. This conference agreed on a statement of principles for the choice and form of headings in library catalogues, which have subsequently had a great influence on the development of the major Western cataloguing codes. These principles placed great emphasis on the concept of the main entry for each document (with appropriate added entries and references), the choice of personal or corporate headings for entries, and the use of uniform headings for consistency.

The second landmark in the 1960s was the International Meeting of Cataloguing Experts (IMCE) in Copenhagen in 1969. The IMCE resolved that:

> "Efforts should be directed towards creating a system for the international exchange of information by which the standard bibliographical description of each publication would be established and distributed by a national agency in the country of origin of the publication. The means of distribution in such a system would be through the medium of cards or machine-readable records. The effectiveness of the system will be dependent upon the maximum standardization of the form and content of the bibliographical description."[1]

In the early 1970s, IFLA's Committee on Cataloguing established (in the British Library in London) an office which later became the International Programme for Universal Bibliographic Control.

2.2 The aims of IFLA in promoting UBC.

When the concept of Universal Bibliographic Control (UBC) was formulated in the early 1970s, its aims were defined as being:

> "...the promotion of a *world-wide system for the control and exchange* of bibliographic information. The purpose of the system is to make universally and promptly available, in a form which is internationally acceptable, basic bibliographic data on all publications issued in all countries.
> The concept of UBC presupposes the creation of a network made up of component national parts, each of which covers a wide range of publishing and library activities, all *integrated at the international level to form the total system.*"[2]

Several years later, after the IFLA International Programme for UBC had had some success in promoting this concept, the aims of UBC were re-stated as follows:

> "The current programme of UBC differs from the *earlier ideas of centralised world control* in that the "Universal" in the title has been seen as a *progressive development* through the strengthening of national bibliographic control and the development and use of international standards and other normative tools. *The Programme is essentially practical*, with one aim - to prevent duplication of efforts in cataloguing and bibliographic recording, and is based on two simple convictions:
> - that each country is best qualified to identify and record the publications of its own authors; and
> - that all countries are willing, in recording their national publications, to follow international bibliographic standards."[3]

The italics in the above quotations are mine: they highlight phrases which reflect a significant change of emphasis. In the climate of opinion of the time, it had been considered vital to set up structures, systems and networks to take advantage of the development of automated information processing, and to advance national and international policy objectives. Many of the systems set up in the 1960s and 1970s are now well-established - not to say mature. Examples include the spread of standard numbering, the ISDS, or systems such as AGRIS and INIS; while shared cataloguing systems have frequently grown into major bibliographic utilities. Similarly, many of the bibliographic control standards promoted by IFLA, Unesco and major national libraries have now become an established part of the mental furniture of staff in most types of libraries.

More recently, the aims of the UBCIM Programme have commonly been defined succinctly as: "the exchange and use of compatible bibliographic records amongst libraries in general and national bibliographic agencies in particular;" and "to create, maintain and promote the use of standards for the exchange of bibliographic data in machine-readable form."

Over the years, the aims of the Programme have become steadily less globally ambitious, one could almost say more prosaic; but I believe that the Programme has become more realistic. There has been no attempt to *impose* standardisation, but rather to coordinate the work of many groups within IFLA for the development of texts reflecting international agreement on best practices in certain areas of librarianship. These texts have become *de facto* standards by virtue of their self-evident value in the attainment of the economic and cultural objectives of UBC.

Since 1987, when the UBC and International MARC Programmes were merged to form the present UBCIM Programme, IFLA's work in standardisation has been even more tightly focussed. It is now in a transitional phase while discussions are under way to determine new priorities and new areas of work.

2.3 IFLA's activities in pursuit of bibliographic standardisation.

The IFLA International Programme for UBC concentrated on four major areas of work:

- the development of the International Standard Bibliographic Description;
- the improvement of national bibliographies;
- the development of international standards for the exchange of bibliographic records in machine-readable form;
- the standardisation of forms of headings for bibliographic records.

In these four areas IFLA produced significant achievements which led to the effective application of standardisation. This work has been pursued in the following ways:

2.3.1 International Standard Bibliographic Descriptions.

These derived from the above resolution of the IMCE. A.H. Chaplin stated that the ISBDs were:

> "designed primarily as an instrument for international communication of bibliographical information. By specifying the elements which should comprise a bibliographical description and by prescribing the order in which they should be presented and the punctuation by which they should be demarcated, it aims at three objectives: to make records from different sources interchangeable; to facilitate their interpretation across language barriers; and to facilitate the conversion of such records to machine-readable form."[4]

Following the original ISBD for monographs came others for serials, printed music, cartographic materials, antiquarian materials (rare books) and indeed one for non-book materials (audio-visual and other material). These documents were not and are not intended to form a code of cataloguing rules - indeed, this would be impossible, as the ISBDs cover only description, not the creation of headings which give access to collections - but they are intended to ensure that bibliographic data is presented in the same way whatever the language and script in which it may be written. Since the early 1980s, a review of the ISBDs has been underway, and new editions of each specific text are appearing, incorporating additions and amendments derived from practical experience. The ISBD was incorporated into AACR and other cataloguing codes, and underlies the descriptive data in records listed in the printed national bibliographies of most countries and in the online databases of the larger national bibliographic agencies.

2.3.2 National bibliographies.

A major step toward the improvement of national bibliographies was the organisation by Unesco of the 1977 International Congress on National Bibliographies, in Paris. On the basis of the recommendations of that congress, the IFLA International Office for UBC later prepared for Unesco a document entitled *Guidelines for the national bibliographic agency and the national bibliography.*[5] This document contained recommendations on how the records of the national bibliography should be prepared, what should be included in it, and what should be the primary and secondary functions of the national bibliographic agency in preparing it.

This document began by stating that the concept of UBC is based on two convictions: that each country is best qualified to identify and record the publications of its national authors, and that all countries should accept international bibliographic standards in making bibliographic records. Effective national bibliographic control is the first requirement, provided by a national bibliographic agency with the backing of a legal deposit law, an adequate administrative infrastructure, and responsibility for publishing authoritative records in a national bibliography. (In some countries today the national bibliographic "agency" may in fact be a de facto network of contracting libraries, but this is not inconsistent with the principles enunciated above.) Mention was also made of the need for retrospective national bibliographies to give an overview of a country's cultural development, and to provide other information for government planning.

The national bibliographic agency also has the role, according to these Unesco *Guidelines*, of providing access to the national imprint. The definition of "national imprint" is in fact problematic now, with the spread of multi-national publishing in the industrialised countries and the common practice in developing countries of including in their national bibliographies records of books by their citizens published abroad (perhaps in the form of theses presented at foreign universities) and of books about these countries published abroad.

The recommendation was also made that the National Bibliographic Agency should ensure that standard numbers (i.e. ISBNs and ISSNs) were added to national records, either by attributing these numbers itself by agreement with publishers and the ISDS, or by encouraging the setting up of a separate national ISBN agency and a national serials data centre. The NBA should also persuade publishers of the value of Cataloguing-in-publication both in marketing terms and in terms of national bibliographic control. The NBA could also become a national component of the various specialised international scientific information systems. The national bibliographic agency should also maintain national authority files for names and subjects. Recommendations were also made on the type of data to be included in national records, the standardised presentation of these records, and the role of the NBA in distributing these records.

Various studies have shown that much progress has been made over the last decade towards achieving these aims.[6]

2.3.3 Standards for the exchange of machine-readable records.

In 1975 the Conference of Directors of National Libraries (CDNL) set up a committee to carry out an international MARC network study. This study (the Wells Report[7]) eventually defined three essential prerequisites for such a network as: effective national bibliographic systems, international compatibility (i.e. use of bibliographic and other standards), and adequate telecommunications. The work of the International MARC Network Committee (IMNC) of the CDNL led to the publication of two particularly significant documents: the *International guide to MARC databases and services*[8] (which not only listed the available services but specified the bibliographic standards they apply), and *International transfers of national MARC records*[9] (which provides guidelines for drawing up service agreements between national bibliographic agencies wishing to exchange their national records, thus extending the scope of standardisation). Nevertheless, a recent review of progress since the Wells Report concludes that "while much has been accomplished and some areas have been overtaken by events or technology, many aspects of the international MARC network have never reached full fruition."[10]

The IFLA Working Group on Content Designators was established in 1972, and by the end of 1976 agreement had been reached on UNIMARC, the international descriptive format designed to facilitate the exchange of machine-readable records between national bibliographic agencies. Two editions of the UNIMARC format were published, together with an interpretative handbook based on experience with applying the format. Further improvement and updating culminated in the publication in 1987 of the definitive version of the format, the *UNIMARC Manual*[11]. Work on the development of the UNIMARC Format for Authorities is now nearly completed.

2.3.4 Standardisation of forms of headings.

Many lists of uniform headings (for names of persons, corporate bodies, states) and general works on authority control were published in the early days of the IFLA International Programme for UBC. These have all been described and commented on by numerous writers. I will simply recall a few here: Eva Verona's important work on corporate headings[12] which later led to the UBC publication *Form and structure of corporate headings*[13]; and the study on *Names of persons: national usages for entry in catalogues* and its later *Supplement.*[14] Two other significant publications were lists of uniform headings for legislative and ministerial bodies in European countries[15] and African countries.[16] In recent years, however, the production of such authority lists, and the updating of the early ones, has lapsed for various reasons. It was originally planned to produce a wider range of publications to balance the heavily Western orientation of these publications, but few results were seen.

2.4 Progress with UBC.

Thus, during the mid-1970s, IFLA promoted the concept of UBC, which was adopted by Unesco as a major policy objective in 1974. UBC was defined as "a world-wide system for the control and exchange of bibliographic information" - it rested on the assumption that each country would implement national bibliographic control, i.e. by making the deposit of publications a legal requirement and setting up a national bibliographic agency to create, publish and distribute records for its national publications. At the international level, UBC would be achieved by the exchange of such national records between national bibliographic agencies. It was also stressed that the *raison d'etre* of UBC was to make library collections accessible.

One aim of UBC was to improve the economics of library work by urging the acceptance of each NBA as the sole authoritative source of records of its own national imprint - i.e. full records should only need to be created once, and could then be re-used as necessary by other libraries around the world.

The fundamental aim of UBC was to bring cultural benefits to the international community. The whole thrust of IFLA's standardisation activities, now carried on by the UBCIM Programme, has been outward. National libraries have been encouraged not only to upgrade their own work but to engage in communication with others. It was always recognised that greater access to bibliographic records was of little benefit (other than to bibliographers) unless free access to the original documents was also provided. (This principle was re-affirmed when IFLA set up its International Programme for UAP - Universal Availability of Publications.)

2.5 Underlying assumptions.

It is clear that UBC activities aimed at the development of recommendations and standards for the whole series of activities in what we might call the "bibliographic chain." There were a certain number of basic assumptions underlying this work, not all of them perhaps consciously expressed. These were:

(a) that the data elements in a standardised bibliographic description should largely be those traditionally making up records included in the catalogues of Western libraries, themselves based on the printed book, the predominant medium;

(b) that unit records should be constructed for each item (i.e. with all data elements given in one record with a main entry heading and appropriate added entries and references); although the construction of unit records might vary as appropriate to different media;

(c) that the design of machine-readable catalogue formats should also accommodate the traditional bibliographic description and the technique of the unit record - (this being also due to the fact that magnetic tape, the predominant medium of exchange of bibliographic records, offered only serial access);

(d) that the bulk exchange of machine-readable records would continue to be largely a matter for research libraries and publicly-funded national libraries (or other national bibliographic agencies) able to invest heavily in and deploy the computer systems necessary for the exchange of bibliographic records on tape.

In addition to these assumptions about the development of strictly professional matters, there were other assumptions arising from the economic conditions of the 1960s and early 1970s in the more highly industrialised countries. Librarians had reason to assume that financial support for library work, and hence the implementation of agreed standards, would continue to be available in sufficient measure. Also, as I have already mentioned, the concept of UBC was predicated on the optimistic assumption that there would be an indirect link between advances in bibliographic control in all countries and greater economic and social progress.

2.6 Present trends.

It is, however, generally agreed that certain trends have begun, in recent years, to cause us to modify these earlier assumptions. Some of these trends or perceptions are:

2.6.1. Limits to the increasing complexity of standards for bibliographic description.

The current stage of development of the ISBDs is seen as being the last, simply because they have become too complex for all but the largest libraries to need to apply them fully. Moreover, the specific punctuation prescribed by the ISBD system, originally the most notable new feature of the system, is now seen by some record creation and distribution agencies as being unnecessarily complex, i.e. too expensive in terms of cataloguers' time. A more fundamental criticism is that, in attempting to legislate for every conceivable possibility, they have come more and more to resemble *de facto* codes of cataloguing rules. It is clear also, from the reactions of both systems designers and library users, that the ISBD structure in its present form is not fully suitable for use in the simplified screen displays being developed for public online catalogues. (A recent study undertaken in the British Library has revealed users' conflicting reactions to traditional record display formats.[17])

When libraries are newly implementing automated systems, they often find they are forced to examine critically the need to provide for the full range of options given in traditional cataloguing codes and descriptive standards for the production of comprehensive and authoritative records with full holdings data. Those libraries committed to maintaining high-quality online catalogues must somehow budget for the increasing costs of employing and training highly skilled staff (both programmers and cataloguers). It is indisputable that automated systems are invested in to increase productivity in technical processing and to increase the retrieval speed and the general availability of records to library users; therefore a slavish adherence to complex descriptive standards may in fact be counter-productive.

2.6.2. Online working within libraries and online links between them.

In the industrialised countries, thanks to the falling price and increasing availability of computing hardware and the availability of sophisticated telecommunications links, we have in recent years witnessed the growth of cooperative input to shared databases, or even the interfacing of automated library catalogues which differ significantly in many ways (e.g. in the classification schemes they apply, the level of quality and detail in their catalogue records, the quality of their inverted files, the search capabilities they offer, and, crucially, in the degree of flexibility and help they offer to the inexperienced user).

When records supposedly prepared according to the same standards are input to a large shared database, differences in the policies applied in the contributing libraries can mean that records are unnecessarily rejected, or duplicate existing records, if they are not subjected to a time-consuming editing process. If editing of records is not adequate, on the other hand, then the amount of "noise" in later information retrieval is very wasteful and frustrating from the point of view of library users. For this reason, many libraries and cooperatives are having to strike a realistic balance in the application of standards, and implement systems for editorial control as large numbers of retrospectively converted records are beginning to be fed into library databases. Partly for this reason, research is now being done (at the University of Bradford, U.K., and elsewhere) into ways of automating quality control.

2.6.3. Open Systems Interconnection (OSI).

The increasing pace of development of OSI protocols will lead to interconnection at all levels from hardware upwards to formats for the transmission of data. The achievement of OSI will lead to the transmission of huge volumes of data across national frontiers. Serious attempts are now being made, in North America and Western Europe (particularly in the context of the European Commission's *Action Plan for Libraries*), to prepare for all the effects which this will have. Quite apart from the questions of copyright and confidentiality which this is already raising, particularly in terms of government and commercial databases, the library and information profession is now trying to foresee the effects which this phenomenon could have on our existing bibliographic standards. Will they stand up to such a powerful factor for change?

(IFLA is currently involved in this area to the extent that research is being conducted by its UDT (Universal Dataflow and Telecommunications) Programme, jointly with the British Library Document Supply Centre and with the support of the Commission of the European Communities, into the design of a communications package for the transmission of interlibrary loan requests. This does not yet directly affect bibliographic standards.)

2.6.4 Retrospective conversion.

Retrospective cataloguing (of previously uncatalogued or briefly catalogued material) should be distinguished from retrospective conversion of existing manual catalogue records into machine-readable form. Retrospective cataloguing is very onerous, involving much staff time used in matching data against records held in other databases, but in the context of well-defined projects (such as ESTC, the international Eighteenth Century Short-Title Catalogue) is has proved its value. Retrospective conversion can be a relatively simpler operation when the quality of the existing records allows OCR techniques to be used; but even where the quality of the original data is too poor to give good results using OCR, the re-keying of data (with post-editing) has proved effective. A successful example of the latter technique is the current British Library Catalogue Conversion Project.

The national and research libraries of most countries still have large manual (printed or card) catalogues of their older collections of books, manuscripts and other materials, in various languages. In many cases, these collections not only include material concerning the nation within its modern territorial boundaries, but also include written records and cultural artefacts relevant to countries of the surrounding region and in some cases to former colonial possessions. In addition to their value as a cultural heritage, these collections constitute a historical record of the development of modern states. They are still a relatively untapped research source of enormous potential which retrospective conversion will allow the industrialised countries to exploit in the context of national policies for social and economic development.

Two other factors increasingly justify the large investment which some countries are now making in the use of modern technology for retrospective conversion or cataloguing. These factors are the need to have better control of older collections for the management of conservation (e.g. identifying the documents most at risk, and adding to records up-to-date information on conservation requirements and treatments applied), and the political and professional requirement that expensive collections be made fully available for public use. The standards used to create and edit the bibliographic records of these collections must therefore accommodate the addition of further data elements to meet new requirements for collection management; while at the same time they must fully meet users' requirements by providing for the clear and self-explanatory display of information.

2.6.5. Competition in record supply.

Economic pressures on national bibliographic agencies in the industrialised countries (the higher operating costs in the present environment, combined with the increasing volume of national and international publishers' output), have led to many libraries expressing dissatisfaction with current national bibliographic services. Commercial firms have for several years been exploiting this situation by providing bibliographic records rapidly and efficiently - both nationally and internationally. They have in some cases used bibliographic standards (for cataloguing rules and designation of data elements) analogous to those applied in libraries; but there has nevertheless been a proliferation of different MARC-type data formats. One might question the need for large, centralised and publicly-funded national bibliographic agencies to continue in their present form, but such agencies will certainly continue to exist in some form. It seems certain that, whether they like it or not, they must learn to collaborate to some extent with their commercial rivals, at least in maintaining standards for bibliographic control, and possibly even in the provision of services.

Opinions are divided on whether or not this competition is beneficial: it certainly seems that it will improve the rapid supply of accurate current bibliographic records in the industrialised countries. On the other hand it can be argued that such commercial competition is unfair: commercial databases are often made available free or at much reduced cost, with no guarantee that the service will not be withdrawn. The developing countries, where national bibliographic control (in the UBC sense) is presently inadequate, should pay close attention to this trend. A recent survey of the value of Third World national bibliographies as library selection tools demonstrated that 40% contained inadequate bibliographic data, and that their speed of publication and extent of coverage were also inadequate in many cases.[18] Commercial competition to supply records to make up for such deficiencies could in fact make it even more difficult for poorer countries to improve their own indigenous systems for bibliographic control.

2.6.6. New requirements for authority control and new possibilities for subject access.

Authority control can be defined as the working of those systems which are designed to facilitate consistency in the presentation of access points.

Names:

For a long time in libraries throughout the world, authority control was operated by means of manual lists and indexes, and often by reference to national bibliographies and other printed sources. National authority control in many countries began to be strengthened decades ago by the growth of shared cataloguing and catalogue card distribution services. More recently, with the application of computing power to shared cataloguing based in national libraries and regional library cooperatives, name authority control became essential and at the same time more economical. The best examples are the National Coordinated Cataloguing Program (NCCP) in the United States, and the authority control possibilities designed into the software of such networks as WLN. On a smaller scale, numerous integrated software packages for library housekeeping increasingly offer authority control as a standard feature.

The activities of IFLA in this area are generally well-known, and I have already mentioned the publications of the UBC Programme. The International MARC Programme issued two editions of its *International guide to MARC databases and services*, giving details of the subject and name authority control applied by the national MARC record services which it listed. However, this guide included data gathered in the early 1980s, and as it is out of date both from the administrative and technical points of view, a new edition is being planned by the UBCIM Programme.

Subjects:

Traditionally, controlled subject access has long been provided by catalogues, whether on cards, printed or on some computer-based medium such as COM fiche, arranged either according to one of the great internationally accepted classification schemes or by agreed systems of subject headings, such as LCSH or the specialised thesauri of particular disciplines, or indeed by headings generated by some other indexing system (such as Precis).

Even with the advent of MARC-type formats and their use in major bibliographic databases, it was natural that automated retrieval of controlled subject information in such databases should continue initially to be largely dependent on specifying fields containing subject data structured and expressed according to traditional schemes; although of course provision was made for uncontrolled subject data (in the form of "keywords") to be retrieved from other fields (for names, titles, publishers, references). Such retrieval was made possible by the prior input of data whose content was designated and articulated according to the structure of a specific record format (usually MARC). However, throughout the 1980s, tremendous improvements in technology (e.g. in terms of data compression, new storage technology, higher operating speeds and more sophisticated indexing software) have combined with radically new approaches to making data publicly available - in particular, by means of public online catalogues and the distribution of records, indeed whole databases, on compact discs - to cause us to reconsider the whole question of subject access. Subject data is normally the most important intrinsic part of any bibliographic record, from the user's point of view. The question now is: should subject authority control continue to be as structured as in the past, or should we take advantage of technology to permit freer searching, and if so, to what extent are present standards still relevant?

Although IFLA has not been active in the development of standards for subject authority control, there has been much debate within IFLA in recent years about the need for further action to develop and maintain standards for authority control in general. Discussions about ten years ago to set up an international authority system seem to have produced relatively little result in terms, at least, of the regular international exchange of authority records between libraries. However, during the present year, IFLA researchers, with the help of the UBCIM Programme, have again begun investigating the type, structure and content of authority files used by national libraries (and their availability to others). These investigations have already allowed IFLA to draw some preliminary conclusions about the relevance of present standards to authority control efforts, and the need for new standards - (or these investigations may lead us to conclude that a laissez-faire approach is in fact the most practical). A group of IFLA specialists is also drawing up guidelines for the construction of subject authority records, which will complement the existing guidelines for name authority and reference records.[19]

The most important IFLA project in connection with authority control is the development of the UNIMARC format for authorities. (This is now being completed ready for publication later this year.) This format will of course allow the exchange of files of machine-readable authority records, which can be automatically linked to corresponding bibliographic (descriptive) records.

2.6.7. New distribution media.

New media are allowing public access to bibliographic records created and maintained by libraries and information services. The new medium for the commercial distribution and exchange of both bibliographic records and other information products is the CD-ROM ("compact disc - read-only memory"). The principal new medium, or rather the new instrument for enabling the public to gain access to online databases is the OPAC or online public-access catalogue, which can be consulted within a library or documentation centre, or made available over a public viewdata network. These developments have various important implications for current bibliographic standards.

2.6.7.1. CD-ROM.

In the case of CD-ROM, output of bibliographic records onto disc need not be in the format used internally by the distributing institution. In theory, the data can be structured in various ways, and reassembled by software in the user interface (perhaps an intelligent "front end") to be displayed in the desired format, (which may be a full national MARC format, UNIMARC, simplified MARC, a proprietary format, or whatever) or showing the ISBD structure. The implications for library standards have not yet been fully worked out, as the medium is not yet sufficiently well established. It seems to me that the need for some sort of record input format with standardised content designators will not diminish (although whether punctuation will need to be input is another matter), and different types of institution will probably have to go on using different types of record format - but the formats used will certainly have to become more compatible with each other. The abandonment of the requirement for sequential access has also opened up new opportunities for national libraries to output their records onto disc not in the traditional full form but in discrete packets of authority, descriptive and subject data with appropriate linking mechanisms - i.e. as a relational database.

2.6.7.2. OPACs.

In the case of OPACs, the implications for current standards are in terms of: the varying screen display formats (with the user usually able to choose among several levels of bibliographic detail), the requirement to select a limited number of data fields for display in the restricted screen area (therefore raising the question of the criteria for selection of fields), the representation on-screen of subject information (by listing data fields, or by showing the hierarchical relationships of the data in a thesaurus context), the question of to what extent boolean logic is relevant to retrieval from an OPAC, the whole question of name and subject authority control, the question of quality control in the source database, the comprehensiveness of indexing in inverted files, and many others.

The problems are well illustrated by a British example: the Joint Academic Network (JANET). Here, the network allows the user access to participating libraries' files (whether the source database itself, or in the form of an OPAC), but the user still has to employ a new set of commands at each change of file, and cope with a wide variety of bibliographic practices.

3. Other international concerns.

3.1. Bridging the gap between different cultures.

It has often been observed that many of the current standards for bibliographic description and classification of documents have a strong Western, Christian and English-language bias. However, efforts have been made for many years to counteract this, while still maintaining international compatibility. Many outdated concepts have been removed - e.g. those relating to older technology, or to colonialism. Many national libraries significantly adapt internationally accepted standards for the purposes of national bibliographic control and the production of national bibliographies: examples are the National Library of Iran which has expanded the Dewey Decimal Classification (DDC) and Library of Congress Subject Headings (LCSH) to cover Persian language and culture, and the Bibliotheque Nationale of France which uses a translated and adapted version of LCSH originally developed in Canada. The national libraries of Australia and New Zealand also expand and adapt LCSH to suit their national contexts.

In the case of the ISBD texts, the recent harmonisation exercise has enabled IFLA to make provision in the revised editions for the inclusion in multi-script descriptions of data reading from right to left. The ISBD structure has also recently been incorporated into new Chinese national standards.

Library associations and other professional bodies in many countries collaborate in efforts to adapt standards of foreign origin to their national context. The UDC is maintained by the International Federation for Documentation (FID) with input from national committees. The Dewey Decimal Classification has recently been issued in a new edition (its 20th) which takes more account of Africa. The Anglo-American Cataloguing Rules (AACR) have been adapted by many countries of Europe and by other English-speaking countries. With the encouragement of IFLA and Unesco, the Arab League Educational, Cultural and Scientific Organisation (ALECSO) is engaged on a programme of translating all the ISBD texts into Arabic; and of course IFLA encourages the translation of the ISBDs into many other languages. Many translations and adaptations of the UNIMARC format are in progress or have been published in France, Portugal and Yugoslavia. Unesco's Common Communication Format is now also available in French, and has been translated and implemented as a national format by the People's Republic of China.

All these standards were developed painstakingly on the basis of international discussions which therefore prepared the way for implementation within individual countries' library and information networks, to an extent which varies in accordance with different national economic and information policies, where such exist. All these standards are flexible enough to be adapted, at least partially, to different cultures. (Those most difficult to adapt are of course the classification schemes; while the simplest are the formats for transmission of bibliographic and other records, which are frameworks for data in many languages and scripts.)

3.2. The economic gap.

It is a truism to state that there is a growing technological and economic gap between the industrialised North and the underdeveloped South. This gross generalisation ignores the fact that, in certain European countries, national libraries and library networks are too small and under-funded, using out-of-date methods, to be capable of fulfilling their proper role. It also ignores the fact that national libraries and other information services in some developing countries are well resourced and do in fact demonstrate a high level of technical expertise in the application of automation and standards for bibliographic control.

Among many examples of this in the Asian context, one may cite the case of Malaysia, where there is a high level of experience and use of computers in education, government and business, and where there exist both library networks (MALMARC, a centralised cataloguing system linking the National Library and most of the university libraries) and government information networks, whose development is aided by a modern telecommunications (i.e. packet switching) network. Another example is Singapore, which is on the way to becoming a truly "wired-up" society.

Nevertheless, the gap between the richest and the poorest countries is wide and growing wider all the time; and this is, in many areas of the world, leading to a vicious circle whereby an under-developed economy does not have the resources needed to obtain and exploit information, and this lack of information in turn prevents efforts being made successfully to tackle the economic crisis.

Bibliographic control is one of several prerequisites for access to information for economic development. This type of information is currently provided by the major regional networks (such as PADIS, the Pan-African Documentation and Information System) and world-wide networks (such as AGRIS, and the services of CAB International); and scientific documentation centres have been created even in the poorest countries to take advantage of the existence of these networks. (Information of value for cultural and economic development can also be provided in the fields of the humanities and the social sciences by the databases of the large national and research libraries of the most highly developed countries; but online access to these is difficult and expensive: more effective use can be made of the bibliographies on different media, whether print, COM or CD-ROM.)

4.0 Policies for bibliographic control

4.1 Awareness of the need for bibliographic control.

It is obvious that, for bibliographic control to be effective, the rationale behind it must be fully understood both by practitioners and those in a position to form policy - there must be an increased level of awareness, throughout society and certainly among decision-makers, of the potential benefits and implications of wider access to information. In those countries where national information policies have been or are being drawn up, it is appropriate for such policies to reaffirm the importance of the principle of bibliographic control and the need for technical standards and tools to attain it. Very pertinent comments were made in a paper to the 1987 IFLA Conference, in which the speaker described the obstacles to creating information awareness in African countries, and emphasised that:

> "...it is essential that information practitioners do not remain librarians, documentalists or information scientists alone but that there should emerge a class of information managers who act as politicians and defend the cause of information at political forums; as salesmen who sell competitive information products in a difficult market-place; as public relations officers who form and change information consumption habits; and as managers who raise the increased financial, technological and human resources required for information pursuits."[20]

Unesco, through its General Information Programme, has promoted the development of national information policies and plans in 22 of its member states; but it recognises that there is much work still to be done.

Bibliographic control must be *appropriate*, i.e. fully integrated into a flexible infrastructure in accordance with the resources available in individual countries. There must be mechanisms for receiving and circulating information, and staff trained to operate these mechanisms who have an understanding of bibliographic control standards as well as subject knowledge. Initially, this infrastructure must operate manual procedures, and the training of staff must be done initially at a basic level: there is no point in introducing automation to information services unless the groundwork has been well prepared. Just as it is pointless for developing countries to introduce electronic IR services unless document repositories and document distribution services exist, so it is pointless for them to invest heavily in the automation of their national bibliographic service unless (a) there is sufficient national demand, and awareness of the value of literacy and public library services, (b) a satisfactory manually-produced National Bibliography already exists and (c) that manual version is already supported by a proper legal deposit law and compiled by the application of internationally agreed bibliographic standards (- in support, once again, of the objectives of UBC).

In this context, it is interesting to note that Wijasurija, in discussing the relevance of IFLA to the developing world, has stated:

> ""Applying IFLA systems, guidelines and standards may be useful, but it seems that in many Third World countries actions of a far more basic nature may be needed. Again, "encouraging translations of publications in librarianship" may be far less important than providing for translations in other fields. Book development and availability, literacy and the inculcation of the reading habit may be far more important considerations in the Third World."[21]

This is undoubtedly true in the case of some countries. Certainly, for example, a seminar on government publications held in Canberra in 1988 identified many fundamental problems in countries of the South Pacific area, relating to professional training, publishing, and the availability and bibliographic control of publications.[22] Action is needed to tackle such basic problems. However, there are enough examples of advanced countries in the Third World to make it possible and necessary to make progress at a higher level in applying standards, guidelines and software developed by all relevant organisations, including IFLA.

Efforts to spread the benefits of automation on an appropriate scale must be encouraged. Many regional and international non-governmental organisations are developing data formats and software for appropriate automation: two obvious examples are Unesco, whose General Information Programme develops and maintains the Common Communication Format (CCF) and the CDS/ISIS software, and the International Development Research Centre (IDRC) which distributes the MINISIS software package. These efforts are vital and laudable: each country must build up the framework for an information infrastructure suited to its national context; but this framework must be clothed. Information systems in developing countries must be able to acquire and use (in machine-readable form) data from all foreign sources which they consider appropriate to them. This conforms to the principle of Universal Availability of Publications (UAP), which was first put forward by IFLA, and later adopted as a major policy objective by Unesco. It is worth repeating here that standards for bibliographic control are not important in themselves but as steps on the way to making source documents available.

Once the groundwork has been done, less developed countries may finally be able fully to link into international information systems, and circuits for the automated distribution of bibliographic records.

4.2 Areas to be covered by information policies.

Library education needs constantly to be rexamined. Is the value and correct application of standards taught in library schools, or on "in-service" refresher courses? If practising librarians do not have experience of new technology to develop their professional awareness, how can they be given access to such new methods?

Policies need to take into account the inter-relationship of bibliographic control with mechanisms for UAP, i.e. document supply systems, on the one hand, and requirements for the preservation and conservation of library materials (particularly in tropical conditions) on the other hand.

Policies must take into account the problems of automation: the high cost of equipment (even at the level of small personal computers) and telecommunications links. T.E. Mlaki has pointed out the value of PCs with simple software packages in automating cumbersome manual procedures, and in creating useful local databases, in an African context; but he also noted some socio-cultural obstacles to greater popular understanding of new information technology in some developing countries.[23]

The IFLA Regional Section for Asia and Oceania has been considering a number of proposals for: the improvement of professional training, an analytical study of the information infrastructure of countries within developing regions, a union catalogue of periodicals in Asia and Oceania, control of national imprints and the implementation of UBC and UAP programmes in Asia and Oceania - among other policies.[24] The Canberra seminar, previously mentioned, made very specific recommendations for the development of bibliographic tools, i.e. the production of the *South Pacific Bibliography* and the *South Pacific Periodical Index*, and recommended special projects to establish: a Pacific names authority file, a list of Pacific subject headings to supplement LCSH, and additions to DDC to make up for deficiencies in Pacific coverage.

Furthermore, the International Conference on Bibliographic Databases and Networks, held in Delhi earlier this year, made strong recommendations for improvements in developing countries' access (both in intellectual and in telecommunications terms) to scientific information services, and for improvements in national bibliographic control. It stressed the importance of standards, and observed that there are numerous bureaucratic obstacles to the distribution of information products (copyright problems, high customs duties on equipment, etc.).[25]

5.0 Suggestions for action by professionals

5.1 Specific projects and studies.

It seems that, due to the technical and economic factors already mentioned, there may be a need for a number of specific studies into the relationship between theory and practice in the application of existing standards and recommendations in bibliographic control, to find out if these tools are still the most appropriate. How should IFLA and other associations of librarians and information specialists react? In the medium and long term, I suggest that the following areas of research should be considered:

- the true cost (in terms of cataloguers' and programmers' time) of the application of current descriptive standards in record creation for national bibliographies, and the possible production of subsets of specific ISBDs for particular purposes, (in addition to the revision of the basic ISBD(G) which is already underway). In particular, applications handbooks could be produced for those countries where bibliographic control is currently weak. This could be done in some cases in collaboration with bodies outside IFLA.

- problems of legislation on copyright and intellectual property, and its relation to the production of national bibliographies in both developed and developing countries.

- the relationship between national libraries, information systems and commercial suppliers of information, to consider rights and responsibilities within the context of national information planning. This could cover numerous issues, e.g. access to agricultural information, document supply systems, the functioning of CIP, descriptive standards, or planning a national acquisitions policy.

- the impact of data-protection legislation on the transborder flow of bibliographic data.

- a study of the impact of OPACs on IFLA-sponsored descriptive standards, and on subject-indexing practices.

- the development of practical standards (descriptive, MARC, subject access) for retrospective cataloguing and retrospective conversion, and the definition of national library policy for making such material available by sponsorship or in joint ventures. Greater attention should be paid to mechanisms for making information from European libraries available to former colonial nations, as is done, for example with material held in the India Office Library in London (part of the British Library).

- the strengthening of regional library groupings, and working jointly with those which already exist, particularly in Africa, Asia, Latin America and the Pacific, to discuss common problems. A useful model for such bodies might be the EFLC (European Foundation for Library Cooperation).

- continuing the present efforts of the UBCIM Programme to coordinate and promote the translation of existing IFLA standards from English into other languages, perhaps by joint efforts with commercial publishers or international bodies if the financial resources or expertise needed are not available in particular areas.

- the commercial and technical viability of new media for the distribution of bibliographic records, bearing in mind the requirements of the industrialised countries on the one hand and the developing world on the other.

- new projects following from the current IFLA investigation into problems of authority control, not only in terms of refining existing standards, but in systems and tools for authority control where these are lacking.

5.2 The role of professional bodies.

In certain cases, as in the past, project work and subsequent publication of new or revised standards could well be undertaken in cooperation with other bodies. These bodies could be professional, such as national library associations (or regional like LIBER - the Ligue des Bibliotheques Europeennes de Recherche); international, such as FID, ACURIL (Association of Caribbean University, Research and Institutional Libraries), ASCOBIC (African Standing Conference on Bibliographic Control), or the Conference of Directors of National Libraries (CDNL); non-profit-making bodies such as OCLC (Online Computer Library Center) or aid agencies such as IDRC; intergovernmental bodies such as ASEAN or the South Pacific Commission; or various others such as the Commonwealth Library Association (COMLA) or the Congress of South-East Asian Librarians (CONSAL). It is essential that close liaison should be maintained with Unesco, within the framework of its 1990-95 Medium-Term Plan, which provides for cooperation with non-governmental organisations.

5.3 The involvement of IFLA.

IFLA, through its UBCIM Programme, will continue to maintain and promote UNIMARC as an international bibliographic exchange format. Records in UNIMARC format can now be generated using MINISIS[26] and CDS/ISIS; and UNIMARC/CCF conversion tables will shortly be available. IFLA will continue to encourage the adaptation of UNIMARC to library systems of various types and sizes. It will also promote the application of the new UNIMARC format for authority records.

IFLA is in an ideal position to help in the maintenance of bibliographic standards because of its experience in the strengthening of links between national and regional library associations. IFLA's involvement can be seen in many professional areas, and in its development of Regional Sections, Regional Offices, and particularly its Core Programme for the Advancement of Librarianship in the Third World. Local professionals and managers of library networks in SE Asia (as in all regions) can help in developing technical standards by publicising their work and exchanging experiences with other colleagues.

Participants in this Symposium should ask themselves how IFLA and its Regional Office in Bangkok can provide the support and advice which they need. Should it, for example, provide technical advice, or should its role be to coordinate meetings and communicate by publishing the results of work of interest both to the local and international community? Above all, I urge participants to provide strong input to IFLA's professional initiatives, and make their voice heard within this international association.

6.0 Conclusions

Appropriate library standards for bibliographic control are of great value to all countries, provided that they are technically well-designed, constantly maintained, developed within the framework of an information policy and applied in a cost-effective manner by the public or private sector agencies which create and market bibliographic records.

The application of such standards can indirectly assist national economic development. It can also help the newly industrialised and still developing nations to gain access, through their own libraries, to elements of their own cultural heritage contained in the great libraries of Europe and North America.

Appropriate national and regional information policies still need to be designed in certain countries and areas, principally of the Third World. In some areas, automation needs to be introduced, though with circumspection.

IFLA, being an international non-governmental professional association, is in a position to mediate between professional librarians and information specialists from different cultures.

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References

1. Report of the International Meeting of Cataloguing Experts, Copenhagen, 1969. In: *Libri* 20 (1) 1970. (Quoted by D. Anderson in: *Universal Bibliographic Control*, 1974.)

2. Anderson, D. *Universal Bibliographic Control : a long-term policy, a plan for action.* - Pullach/Munchen: Verlag Dokumentation, 1974. (p.11)

3. *Manual on bibliographic control* / IFLA International Office for UBC. - Paris: Unesco PGI and UNISIST, 1983. - (PGI-83/WS/8)

4. Chaplin, A.H. In: Foreword to the ISBD(M) (preliminary edition).

5. *Guidelines for the national bibliography and the national bibliographic agency* / IFLA International Office for UBC. - Paris: Unesco, 1979. - (PGI/79/WS/18)

6. See, in particular:

- Beaudiquez, M. *Bibliographic services throughout the world.* - Paris: Unesco (PGI). Editions as follows:
  - 1970-74, published 1977;
  - 1975-79, published 1984;
  - 1980, published 1982; supplement to PGI UNISIST Newsletter 10 (1);
  - 1981-82, published 1985 (PGI85/WS/5);
  - 1983-84, published 1987 (PGI87/WS/4).

- Bell, Barbara L. *An annotated guide to current national bibliographies*. - Alexandria, VA: Chadwyck-Healey, 1986.
- *Proceedings of the national bibliographies seminar, Brighton, 18 August 1987* / ed. by W.D. Roberts. - London: IFLA UBCIM Programme, 1987.

7. Wells, A.J. *The International MARC Network: a study for an international bibliographic data network*. - London: IFLA International Office for UBC, 1977. - (Occasional Papers; 3)

8. *International guide to MARC databases and services* / ed. by D. Wolf and F. Conrad. - Frankfurt am Main: Deutsche Bibliothek, 1984 (1st ed.), 1986 (2nd ed.).

9. *International transfers of national MARC records: guidelines for agreements relating to the transfers of national MARC records between national MARC agencies*. - London: IFLA UBCIM Programme, 1987.

10. Clement, H.E.A. - "The International MARC Network and National Libraries." In: *Alexandria*, 1 (1) 1989, p25.

11. *UNIMARC Manual* / ed. by Brian P. Holt with the assistance of Sally H. McCallum and A.B. Long. - London: IFLA UBCIM Programme, 1987.

12. Verona, Eva. *Corporate headings: their use in library catalogues and national bibliographies: a comparative and critical study*. - London: IFLA Committee on Cataloguing, 1975.

13. *Form and structure of corporate headings* / recommendations of the Working Group on Corporate Headings. - London: IFLA International Office for UBC, 1980.

14. *Names of persons: national usages for entry in catalogues*. - 3rd ed. - London: IFLA International Office for UBC, 1977. And its *Supplement...*, 1980.

15. *Uniform headings for higher legislative and ministerial bodies in European countries* / USSR Cataloguing Committee. - 2nd ed. - London: IFLA International Office for UBC, 1979.

16. *African legislative and ministerial bodies: list of uniform headings for higher legislative and ministerial bodies in African countries* / ASCOBIC. - London: IFLA International Office for UBC, 1980.

17. Bryant, P. "Bibliographic access to serials: a study for the British Library." In: *Serials (the journal*

of the United Kingdom Serials Group) 1 (3) 1988, pp41-46. *AND:* ""What is that hyphen doing, anyway?" - Cataloguing and classification of serials and the new technologies." In: *International Cataloguing & Bibliographic Control* 18 (2) 1989, pp27-29.

18. Gorman, G.E. and J.J. Mills. "Evaluating Third World national bibliographies as selection resources." In: *Library acquisitions: practice and theory*, 12 (1988), pp29-42

19. *Guidelines for authority and reference entries.* - London: IFLA International Programme for UBC, 1984.

20. Abate, Dejen. "Libraries and information services in a changing world: the challenges African information services face at the end of the 1980s". (Paper presented to the IFLA Conference, Brighton, 1987; no. 119-AFRICA-1-E.)

21. Wijasurija, D.E.K. "IFLA's Core Programme on the Advancement of Librarianship in the Third World: orientation, mechanisms and priorities." In: *IFLA Journal*, 14 (4) 1988, p.329

22. Seminar on Government Publications and Collection Development in the South Pacific Area, Canberra, 5-7 September 1988. See its *Resolutions.*

23. Mlaki, T.E. "Introducing micro-computers for national bibliographic control activities in developing countries." In: *The application of micro-computers in information, documentation and libraries* / ed. by K.-D. Lehmann and H. Strohl-Goebel. - Elsevier, 1987.

24. Report of the activities of the IFLA Regional Section for Asia and Oceania, 1987-88. (Presented to the IFLA Conference, Sydney, 1988; no. 96-ASIA-3-E.)

25. *International conference, New Delhi, India, 22-25 February 1989: Bibliographic databases and networks: papers* / ed. by S.S. Murthy, Anuradha Ravi and A. Lakshmana Moorthy. - New Delhi: Tata McGraw-Hill, 1989.

26. Woods, E. The MINISIS/UNIMARC Project: final report. - London: IFLA UBCIM Programme, 1988.

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BIBLIOGRAPHIC CONTROL FROM THE USER'S POINT OF VIEW

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Abstract

Libraries worldwide are using new information technologies to automate their card catalogs, create in-house databases, and establish local and regional networks. Discussions on universal bibliographic control and record format have been a logical result. These are from the point of view of the librarian or information specialist who is collecting, organizing and inputting the data. At times it appears that a primary goal of standardizing records and maintaining authority files seems to be lost. The purpose of bibliographic control is not only to document what we own or create a uniform catalog. It is to improve access to information for our users.

This paper will look at user needs in designing an information system. It is important to consider user access as well as staff input. At the same time that we are designing our system inputs, we should be designing our system outputs.

Certain aspects of bibliographic control become more important when the user is retrieving information from a machine readable datafile; others become less important. Factors we need to consider include :

Who will be accessing the information

What will be included in the record

What retrieval software will be used

What is the output format

What access points does it have

Is it appropriate for our user group

What documentation is provided

Examples of both catalog and database systems will be given, including a mainframe online integrated system, an online system in a multilingual environment, and internationally available databases online and on CD-ROM.

BIBLIOGRAPHIC CONTROL FROM THE USER'S PERSPECTIVE

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Libraries worldwide are using new information technologies to automate their card catalogs, create in-house databases, and establish local and regional networks. Discussions on universal bibliographic control and record format have been a logical result. These are from the point of view of the librarian or information specialist who is collecting, organizing, and inputting the data. At times it appears that a primary goal of standardizing records and maintaining authority files is lost. The purpose of bibliographic control is not only to create a uniform catalog of our holdings. It is to improve access to information for our users. User needs and training are an essential component of bibliographic control.

In the 1960's and 1970's, when western libraries began automating the cataloging function using a shared utility(OCLC), we made many mistakes. We did not envision the enhancements that computerization would bring us. The means became the ends - the automated cataloging system became an end in itself.

Instead of productivity increasing, backlogs increased. Catalogers tried to create a record that fellow network users would be willing to adopt. AACR1 changed to AACR2 accompanied by recataloging and card modification. Online systems with difficult command protocols gave rise to a class of librarian called "intermediaries". We put up artificial barriers between users and information. Now, however, the trend is to create systems where the individual who needs the information is the one who can access it.

There are many articles in the literature about bibliographic control, especially in non-Western institutions. There are also many about users of catalogs. There are few articles, however, about both and these are several years old.

This paper will look at user needs for information retrieval. It is important to consider user access as well as staff input. At the same time that we are designing our system inputs, we should be designing our system outputs.

Certain aspects of bibliographic control become more important when the user is retrieving information from a machine readable datafile; others become less important. Factors we need to consider include:

- Who will be accessing the information
- What will be included in the record
- What retrieval software will be used
    - What is the output format
    - What access points does it have
    - Is it appropriate for our user group
- What documentation is provided

Examples of online catalogs and commercial database systems will be given, including a mainframe online integrated system, an online system with many databases, and internationally available databases online and on CD-ROM.

TABLE 1. The Information Retrieval System

THE SYSTEM

	INPUT	PROCESS	OUTPUT
WHO:	Librarian/Information professional		Librarian/ Information Professional *End-User
WHAT:	Books,journals,nonprint grey literature,thesis etc.	MARC records Authority files Classification schemes	Cards Microform Book catalogs OPAC(1)
HOW:	AACR1, AACR2	Type/write Terminal Microcomputer	Serial files Multiple access points

---

(1)Online Public Access Catalog

USERS

A library or information center serves many client groups: our funding agencies, ourselves, our user constituency, other librarians, and outside information seekers. For many of us in academic, public, and special libraries, our primary users are non-librarians with various levels of sophistication.

Potential Primary Users

- Scholars
- Librarians and information specialists
- Researchers in academia and government
- Graduate and undergraduate students
- Business community
- Individuals seeking personal information

We know our collections and the organization of the materials. Hopefully, we understand our access tools and can find what we need. Individuals with a subject specialty can become familiar with a small set of subject headings and titles in their disciplines. But many library users and potential library users cannot negotiate our systems.

> Should a user looking for information on Thai dancing need to know whether to look under Thailand--Dancing or Dancing-Thailand
>
> Should a user have to know that in some libraries, in the card catalog, University of Pennsylvania is under University of Pennsylvania and in others it is under Pennsylvania. University of
>
> Should a user need to know what a main entry is?

Assigning subject headings is not a science. In 1955, 340 Columbia University Library School students assigned subject headings to six different books. An average of 62 different headings were selected per book of which 61 were different from the heading in the card catalog (Swanson).

A survey on the use of on-line public catalogs at the Dutch Royal Library and Groningen University Library showed an increase in searching by title and a decrease in subject searching as compared to the card catalog. Another study at the Royal Library concluded that in 90% of the publications, the subject was adequately described by the title (Donkersloot).

The formal organization of library materials, promoted as a means of providing bibliographic control for improved information access, in fact may limit information access for many of our users.

RECORD STRUCTURE

Consistent record design is a vital component of transborder bibliographic control. But, in structuring a database, you must not only consider the input fields; you must also consider the output formats. What information does the staff need to retrieve? What information does the user need to retrieve? Public service staff should be involved in planning as well as technical processing staff.

Today, only a limited number of subject headings are assigned. This rationing obviously is a result of the work that goes with generating and filing cards. Library of Congress Subject headings have only three possible levels, which must be retrieved in order: for example - Indonesia--History--1945. These subject headings were designed for a very large, non-specialized collection. Subject-specific terminology, jargon, and current "hot topics" are not included. New headings are added slowly.

Machine readable databases free us from these restrictions. Many subject headings may be assigned to a record as is being done with commercially available databases like LISA or ERIC.
All of the following descriptors were assigned one article in the ABI/Inform database:

> Health care delivery; Technology; Evaluation; Capital investments; Hospitals; Management decisions; Trends; Conflicts; OTA; Federal legislation; Medicare-US; Prospective payment systems; Public policy; Joint ventures; Physicians; Cost control; Life cycles

Records can be entered in complete MARC record format; but records can also be entered in short format for grey literature or ephemeral publications. We can add our own searchable fields if we wish to include our own more specific subject headings in addition to the controlled terms. We can include abstracts. In AIT's in-house databases, book chapters are entered as individual searchable records.

When we look at the MARC record structure, we need to ask why each line of information is included. In institutions other than national libraries and major academic institutions, is every line needed? Will it improve access to information?

If material is sitting in the cataloging department for three years because you cannot determine the official name of the foreign organization who edited a fifty page paperbound publication, who are you helping?

What we have learned is that an automated catalog allows us to include materials that used to line the shelves of the back room of our cataloging departments or get thrown into the Vertical File, never to be seen again. Theses, working papers, pamphlets and newsletters are assigned short entries that include the information that our users need for access.

RETRIEVAL SOFTWARE

Once we have identified our users groups and decided what should be in each record, we then have to determine the most appropriate way to present the information:

CARDS
MICROFORM
PRINTED BOOK CATALOG
ONLINE /ON DISK CATALOG

Library cards have been our downfall. Have you ever counted the number of hours your institutions spend producing and filing cards? There are special rules for filing cards. But the user does not know these rules. Items are missed because the user has not looked in the "correct" sequence in the card catalog.

One criticism that I hear about automated catalogs is that they require a large number of terminals, terminals are expensive, and only one person can use a terminal at a time. This is true. But what you are not counting is all of the people who are not finding what we own because they cannot use the catalog correctly.

People will wait for a machine if it is useful. Look at the photocopying machine. Before photocopying, everyone sat at a library table and wrote notes by hand. Many institutions have only one or two photocopiers. Users not only wait but also pay to use the it, because they recognize its value.

A card catalog is a fixed piece of furniture. It exists in one place, within our building. Users have to come to us to find out what we own. If we are closed, the information is not available. Machine readable catalogs can be distributed. They can be printed in book format; they can be put onto networks.

Machine readable information also expands the potential access points for the user. Bibliographic control, name and subject authority are important in creating records for us. The ability to access multiple fields and single words or phrases within a record are important to our users.

Some important characteristics in evaluating the retrieval capabilities of the software we are considering for our catalogs. are listed below:

Is it menu driven or command driven?
Can you do keyword searching?
Can you do field searching?
Can you combine terms?
Does it have an index?
How does it truncate?
What is the screen display like?
What are the output formats?

In a paper presented at a conference sponsored by the Centre for Catalogue Research, Bath University, Stephen Walker puts in a plea for the user, recommending that greater attention be paid to designing on-line public access catalogues around the user interaction facet. He discusses the problem of combining ease of use with effectiveness (Walker).

DOCUMENTATION

> First principle. Users need to know about information services. This is rather obvious but it is important to keep in mind ...(Courrier)

Whether our catalog is in print or machine readable form, our users need instruction: handouts, signs,training, online help screen, staff assistance. Even if we follow all of the cataloging rules and have excellent quality control, but users will still walk away empty handed if we don't tell them the rules.

If you are using a machine readable system:

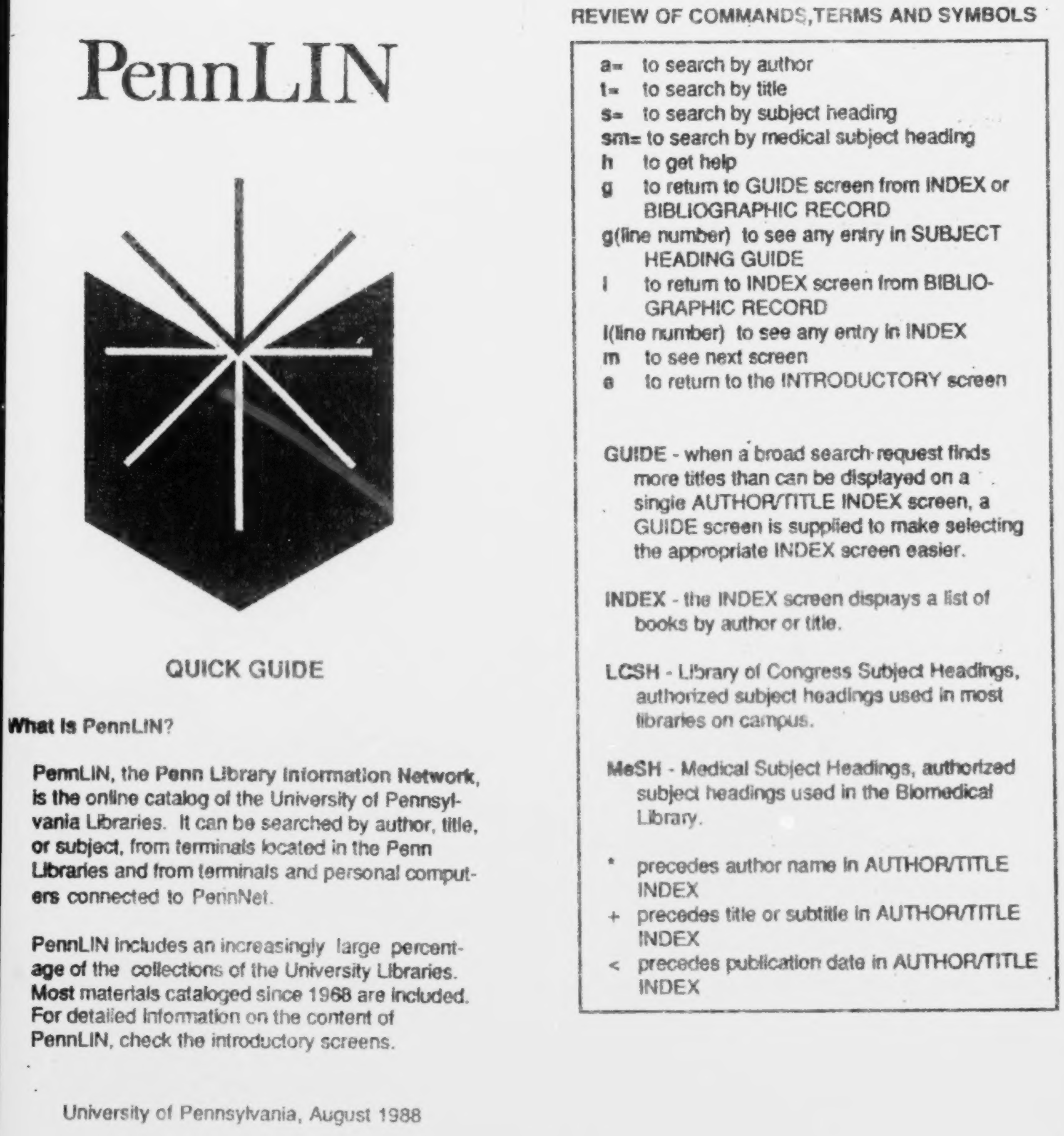
> Are there help screens and documentation?
> What type of training is necessary for your staff?
> What type of training is necessary for your users?

Help screens are part of the system design. The buzz word now is "context-sensitive". When you press the key for help, the screen that appears is related to where you are in your query. For instance, if you ask for help while conducting a subject search, the screen that will appear will talk about subject searching. In less user friendly systems, you have to go through a series of screens to find the help you need.

Training your staff is important. Good managers recognize that the introduction of new systems is stressful for staff. Provide a written training manual. All staff members should receive some level of training, even those who are not directly involved with the system.

You might find that group training of users is more efficient than individual training in academic settings. Place simple handouts near your terminal. Handout design takes time and thought. Users are not willing to spend a lot of time learning how to use a system. A system that requires more than two pages of instructions is too complicated for public access! Have a staff member available to provide help for the user. No matter how much training and documentation we provide, users still need human communciations. When the information is being distributed on a network, the library also has to provide for a way to help the invisible user (Wayman-Kalin).

FIGURE 1. SAMPLE BROCHURE FOR PENNLIN USERS



PennLIN

QUICK GUIDE

What is PennLIN?

PennLIN, the Penn Library Information Network, is the online catalog of the University of Pennsylvania Libraries. It can be searched by author, title, or subject, from terminals located in the Penn Libraries and from terminals and personal computers connected to PennNet.

PennLIN includes an increasingly large percentage of the collections of the University Libraries. Most materials cataloged since 1968 are included. For detailed information on the content of PennLIN, check the introductory screens.

University of Pennsylvania, August 1988

REVIEW OF COMMANDS,TERMS AND SYMBOLS

a= to search by author
t= to search by title
s= to search by subject heading
sm= to search by medical subject heading
h to get help
g to return to GUIDE screen from INDEX or BIBLIOGRAPHIC RECORD
g(line number) to see any entry in SUBJECT HEADING GUIDE
i to return to INDEX screen from BIBLIOGRAPHIC RECORD
i(line number) to see any entry in INDEX
m to see next screen
e to return to the INTRODUCTORY screen

GUIDE - when a broad search request finds more titles than can be displayed on a single AUTHOR/TITLE INDEX screen, a GUIDE screen is supplied to make selecting the appropriate INDEX screen easier.

INDEX - the INDEX screen displays a list of books by author or title.

LCSH - Library of Congress Subject Headings, authorized subject headings used in most libraries on campus.

MeSH - Medical Subject Headings, authorized subject headings used in the Biomedical Library.

* precedes author name in AUTHOR/TITLE INDEX
+ precedes title or subtitle in AUTHOR/TITLE INDEX
< precedes publication date in AUTHOR/TITLE INDEX

SAMPLE SYSTEMS

Let us look at two different public access systems. One is mainframe ISIS as it is loaded at AIT. The other is NOTIS as it appears at the University of Pennsylvania. ISIS is designed first as a database package. It has been adapted for OPAC use. NOTIS is designed to provide an integrated library system, based on MARC record format. Both systems run on mainframe computers and are distributed on campus and available for dial-up access using telephone hookup. For the user, both have their strengths and weaknesses.

ISIS AT AIT:

ISIS' nicest feature is the ability to search for individual words from a title or subject field. The order of the words is not important. However, the system is command driven with no online help or error messages. The user who types in:

```
Thailand and rice production
```

will get no hits because the proper format is:

```
=thailand*rice*produc$
```

On the other hand, a user who knows the system commands can find books about producing rice in Thailand without knowing any individual titles or subject headings.

ISIS on AIT'se mainframe is difficult to access. One full page of documentation is needed just to explain how to log on. No one has been able to develop a gateway or menu. The mainframe is often down. In addition to Bookcat the AIT system includes an acquisitions file, several internally produced databases from the regional documentaiton centers, UNIO (the Union List of Serials in Thailand), and a few external databases. All are searchable with ISIS software.

NOTIS at University of Pennsylvania [PennLin]:

At the University of Pennsylvania libraries, some PennLin terminals are dedicated to the book catalog and remain permanently logged on. Others are brought up each morning. Terminals are distributed in the central library and the departmental libraries.

Individuals accessing PennLin from remote locations have been given customized copies of Procomm communications software that allows for automatic log on. The system is down infrequently. In addition to the book catalog, PennLin has two major commercial databases, Medline and ABI/Inform and some small in-house databases.

The catalog does not yet have a keyword search capability, though command searching using BRS protocol has been promised and is already in use for the database systems. The user enters one of three choices: t= or s= or a= and an index listing will cascade. For instance, if the user enters:

```
s=rice
```

a list of subject headings beginning with the word rice will appear:

```
SUBJECT HEADING GUIDE -- 5 HEADINGS FOUND, 1-5 DISPLAYED
1  Rice
2  Rice--Asia
3  Rice--Drying
4  Rice--Malaysia
5  Rice--Thailand
```

The user enters the number 5 at the prompt and a list of titles will be displayed in reverse order from loading in the database:

```
SUBJECT/TITLE INDEX -- 12 TITLES FOUND, 1-12 DISPLAYED
THAILAND--RICE
1 Ricebasket of asia:producing rice in Th    vanp:
2 Marketing rice and grain to developing nat lipp:
3...
```

A user who did not know the exact title of the book about production of rice in Thailand could only have found it by browsing through the subject/title index in this system.

Language and spelling variations are problems in multilingual environments. A naive user entering organisations" in BookCat would retrieve books with "organisation" as a title word but not as the subject "organization". Also, systems in multi-lingual environments really need to be more user-friendly than in insitutions where the materials and the users all have the same primary language.

TABLE 2. SYSTEM DESCRIPTIONS

AIT BOOKCAT

Software: ISIS
Records: 78000 +
Access: Cable, limited dial-in
Functions with a single record: Bookcat
Logon: Each user must log in through a multi-step process
Retrieval Capabilities: Command driven
Access points: Free text and field searching
Logical operators: Boolean symbols combining text or previous sets
Truncation: Wild card *
Index displays: No
Screen display: One record at a time in card catalog format
Does not include holdings
Output options: On screen, offline prints; downloading capability not offered to the public
Documentation: Four page handout for users; staff manual
Training: Student training as part of a computer literacy course; daily sessions in the library
Other applications: In-house databases created by Regional Documentation Centers, UNIO, Acquisitions file, other files

PENNLIN

Software: Notis
Records: One million +
Access: Cable, network, dial-in from home or office with password control
Functions with a single record: Online catalog, acquisitions, cataloging, serials check-in, circulation
Logon: For library terminals, staff logs on once a day
Retrieval capabilities: Menu driven
Access:By first word(s) or title, subject or author name
Logical Operators:Not currently available for Book catalog
Truncation: Automatic
Index: If more than one record, displays an index
Screen display: Displays a guide to multiple records including author or title or subject heading; an index; a card with holdings and locations
Output options: Limited printer access; print screen; multi-step downloading process
Documentation: Staff manual; user pocket guide
Training: Staff training; user training as part of orientation; individualized training for classes or faculty
Other applications: Commercial databases (ABI/Inform and Medline) using BRS search software; in-house databases

FIGURE 2. SAMPLE RECORDS FROM BOOKCAT AND PENNLIN

BOOKCAT Record

Search: =agricultur$ + systems

Call number

Author

Title

Subject

```
        -- PAGE 001 --

     S544.5
     T5 P7
          Prince of Songklha University. GRET Technological Resea
            and Exchange Group; Prince of Songklha University.
              Farming systems research and development in Thailan
           illustrated methodological considerations and recent
           advances. Songklha, Prince of Sonklha University, 1988.
               212 p.

              Agricultural systems - Thailand
```

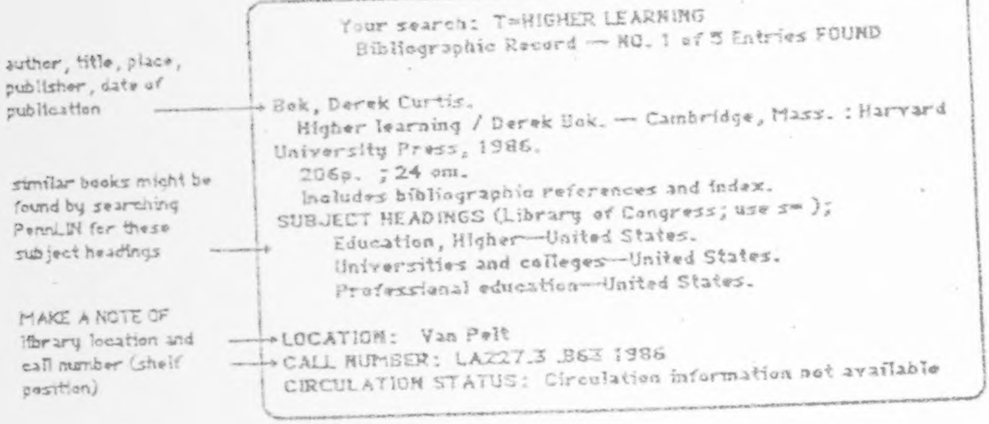
UNIO Record

Journal title

Holdings

```
     AGRICULTURAL SYSTEMS
          START DATE 1976  ENDDATE    FREQUENCY Q
          BARKING, ESSEX.  APPLIED SCIENCE
          AIT: LB, V1,-      ,1976-
          KAS:CL,  V4,-      ,1979
```

PennLIN record for a book



author, title, place, publisher, date of publication

similar books might be found by searching PennLIN for these subject headings

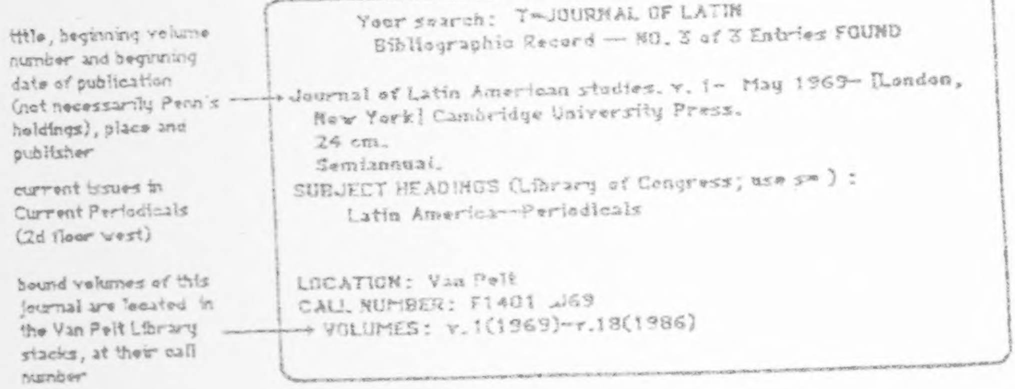
MAKE A NOTE OF library location and call number (shelf position)

```
        Your search:  T=HIGHER LEARNING
         Bibliographic Record — NO. 1 of 5 Entries FOUND

Bok, Derek Curtis.
  Higher learning / Derek Bok. — Cambridge, Mass. : Harvard
University Press, 1986.
  206p. ; 24 cm.
  Includes bibliographic references and index.
SUBJECT HEADINGS (Library of Congress; use s= );
    Education, Higher—United States.
    Universities and colleges—United States.
    Professional education—United States.

LOCATION:  Van Pelt
CALL NUMBER: LA227.3 .B63 1986
CIRCULATION STATUS: Circulation information not available
```

PennLIN record for a periodical



title, beginning volume number and beginning date of publication (not necessarily Penn's holdings), place and publisher

current issues in Current Periodicals (2d floor west)

bound volumes of this journal are located in the Van Pelt Library stacks, at their call number

```
        Your search:  T=JOURNAL OF LATIN
         Bibliographic Record — NO. 3 of 3 Entries FOUND

Journal of Latin American studies. v. 1-  May 1969- [London,
  New York] Cambridge University Press.
  24 cm.
  Semiannual.
SUBJECT HEADINGS (Library of Congress; use s= ) :
    Latin America--Periodicals


LOCATION: Van Pelt
CALL NUMBER: F1401 .J69
 VOLUMES: v.1(1969)-v.18(1986)
```

One U.S. OPAC is designed for semi-literate users. Information retrieval is with a touch screen. The user looking for information about rice would actually touch the letter "R" on the screen, then "RI", etc. It assumes that this user may be able to recognize what he cannot spell.

Commercial Search Software:

The most innovative software for information storage and retrieval is found today in CD-ROM systems. Some of the more sophisticated packages, like Compact Disclosure, Dialog, Wilson Disc and Cambridge have different levels of search software, from simple menu-driven systems to command systems that emulate online timesharing systems. Users of the Dialog menu option can not only search for words or phrases but also can search for numeric information and create records that are compatible with spreadsheets. The Cambridge menu user can select fields, number of words between terms, and create his or her own output formats. UMI files have context sensitive help screens that will pull down the appropriate help screen for where you are in the search.

A database like ABI/Inform was created exclusively for machine readable retrieval and each article a large number of descriptor terms. The systems will display indexes online. As more libraries and information centers purchase CD-ROM and make it available for public use, users will demand more from the online catalogs.

CONCLUSIONS

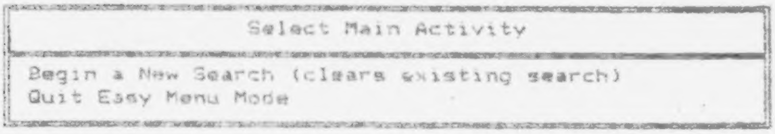
I am not recommending that we abandon all bibliographic control. What I am suggesting is a balance between internal needs and external needs. The progress that we are making in gathering, classifying and cataloging our national literature and our "grey" literature is exciting. Machine readable catalogs and worldwide networks are exciting. Our challenge is to create records that maintain the integrity that we as professional librarians and information specialists expect from ourselves. At the same we must create retrieval systems that provide barrier

FIGURE 3. MENU-DRIVEN SOFTWARE ON CD-ROM

The "easy menu" mode on Compact Disclosure leads the user through search strategy construction and allow the user to perform complex searches without learning commands.

COMPACT DISCLOSURE

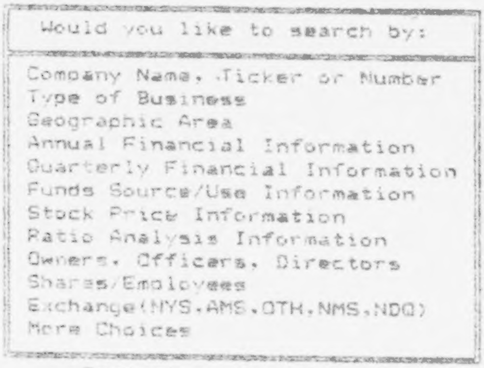
Sample screens in Easy Menu Mode



Select Main Activity

Begin a New Search (clears existing search)
Quit Easy Menu Mode

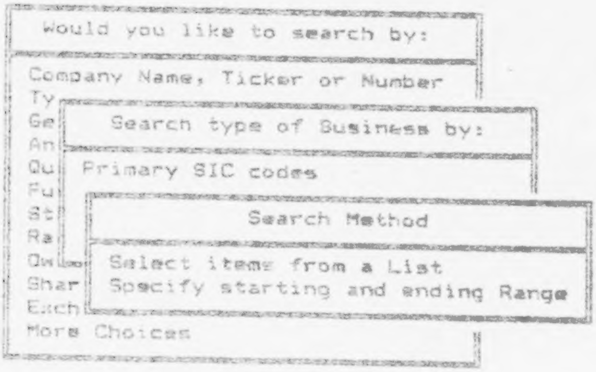
Press F1 for Help Information



Would you like to search by:

Company Name, Ticker or Number
Type of Business
Geographic Area
Annual Financial Information
Quarterly Financial Information
Funds Source/Use Information
Stock Price Information
Ratio Analysis Information
Owners, Officers, Directors
Shares/Employees
Exchange(NYS.AMS.OTH.NMS.NDQ)
More Choices

Beginning a New Search



Would you like to search by:

Company Name, Ticker or Number
Ty
Ge
An
Qu
Fu
St
Ra
Ow
Shar
Exch
More Choices

Search type of Business by:

Primary SIC codes

Search Method

Select items from a List
Specify starting and ending Range

free access to these records to individuals all over the world.

To achieve this goal, we need to be flexible, reasonable, and consistent. Technical processing and public service staff both have to be included in systems design. Technical processing staff have to consider the implications of machine readable information retrieval and modify their systems to take full advantage of the power of the computer. Public service staff have to be sympathetic to the objectives of the processing staff. And everyone has to remember that our number one goal is to expand information access to our users.

Notes:

Don R. Swanson, Historical Note:Information Retrieval and the Future of an Illusion. Journal of the American Society for Information Science, 39(2)March 1989.

H.B. Donkersloot. Searching by title word: a study of the on-line public catalogue. Open, 17 (12) Dec 85, 542-546.

Yves Courrier. Opening Address:UNESCO'S activities in the area of user training in library and information work. IATUL Quarterly 1(1) March 1987.

Stephen Walker. Ease of use in online catalogues: a plea for the user. Online public access to library files: Second National Conference, 1986, Bath University, 79-89.

Sally Wayman-Kalin. The invisible users of online catalogs: a public services perspective. Library Trends. 35(4)Spring 87

BIBLIOGRAPHY[1]

The following articles discuss Universal Bibliographic Control and user needs:

Abrera, Josefa B. Bibliographic structure possibility set; a quantitative approach for identifying users' bibliographic needs. Library Resources and Technical Services. 26(1)Jan/Mar 82, 21-36.

Bryant, Philip. Progress in documentation: the catalog. Journal of Documentation. 36(2)June 80, 133-163.

Line, Maurice and Vickers, Stephen. IFLA's programme of UAP-Universal Availability of Publications. International Forum on Information and Documentation. 7(3)July 82, 8-9.

Nasatir, Marilyn. Machine-readable data files and networks. Information Technology and Libraries. 2(2) June 83, 159-164.

The following articles discuss Universal Bibliographic Control:

Amarasuriya, Nimala R. Development through information networks in the Asia-Pacific region. Information Development, 3 (2) Apr 87, 87-94.

Anderson, Dorothy. Bibliographic control in practice. IFLA Journal. 6(3) 1980, 242-248.

Anderson, Dorothy. UBC: a survey of Universal Bibliographic Control. London, IFLA International Office for UBC, 1982, 36p. refs. (Occasional Papers No.10).

Anderson, Dorothy. Universal Bibliographic Control: history, present state and perspectives of development. Bibliotekovedenie i Bibliografia za Rubezhom. (97) 1984, 38-57.

Anderson, Dorothy. Waiting for technology: an overview of bibliographic services in Third World countries. IFLA Journal. 9 (4) 1983, 285-295.

da-Terra-Caldeira,Paulo. Universal bibliographical control in Brazil. Revista da Escola de Biblioteconomia da UFMG, 13 (2) Sept 84, 260- 283.

Jansova, Eleonora. Universal Bibliographic Control. Citatel', 36 (1) 1987, 16-17.

---

[1] Articles retrieved from searches on LISA,ERIC, and Information Science Abstracts.

Jung, Rudolf. Universal Bibliographic Control (UBC) [in German] Zeitschrift fur Bibliothekswesen und Bibliographie, 30 (2) Mar/Apr 83, 111-119.

Posnett, N.W and Baulkwill, W.J. Working with non-conventional literature. Journal of Information Science, 5(4)Dec 82, 121-130.

Radova, Jana. Universal Bibliographic Control and the Czech national bibliography of books. Ctenar, 36 (5) 1984, 155-156.

Shaw, G.W. Aspects of Asian bibliography: part 1 Retrospective bibliographic control for South Asia. International Cataloguing, 15 (4) Oct/Dec 86, 40-43. Paper presented at the 52nd IFLA General Conference held in Tokyo, Aug 86.

Tan Check-neng. The growing need for Universal Bibliographic Control. National Library Bulletin(Papua New Guinea),2 (2) June 83, 5-7.

Unesco Workshop on scientific, technical and industrial information services in Southeast Asia(1977). Baca,5(1)1978, 1-3.

The following articles discuss users of catalogs:

Ashoor, Mohammed Saleh; Khurshid, Zahiruddin. User reactions to the online catalog at the University of Petroleum and Minerals Library. Journal of Academic Librarianship, 13 (4) Sept 87, 221-225.

Bosman, Fred. Report on the survey of OPAC use at Groningen University Library. PICA Mededelingen, 10 (5) Dec 87, 2-6.

Courrier, Yves. Opening address: UNESCO'S activities in the area of user training in library and information work. IATUL Quarterly, 1(1) March 1987, 10-12.

Donkersloot, H B. Searching by title word: a study of the on-line public catalogue. Open, 17 (12) Dec 85, 542-546.

Hancock, Micheline. Subject searching behaviour at the library catalogue and at the shelves: implications for online interactive catalogues. Journal of Documentation, 43 (4) Dec 87, 303-21.

Koohang, Alex A; Byrd, David M. A study of attitudes toward the usefulness of the library computer system and selected variables: a further study. Library and Information Science Research, 9 (2) Apr-June 87, 105-111.

Miller, William. Instructing the online catalog user. Research Strategies, 4 (2) Spring 86, 81-84.

Osiobe, Stephen. Use and relevance of information on the card catalogue to undergraduate students. Library Review, 36 (4) Winter 87, 261-267.

Prowse, Steven. Experimental online public catalogue interfaces LIBER News Sheet, (15) 1985, 9-11. Reprinted from Centre for Catalogue Research Newsletter, Bath University, (10) 1985.

Pullinger, David J. Human factors in online design. Online Public access to library files: Second National Conference 1986, Bath University, 91-99.

Smith, Virginia. Online catalogs and the user. Public Library Quarterly, 7 (3/4) Fall/Winter 86, 71-82.

Vigil, Peter J. The software interface. Annual Review of Information Science and Technology, volume 21, 63-86.

Walker, Stephen. Ease of use in online catalogues: a plea for the user.Online public access to library files: Second National Conference, 1986, Bath University, 79-89.

Wayman-Kalin, Sally. The invisible users of online catalogs: a public services perspective. Library Trends. 35(4) Spring 87, 587-595.

Wellisch, Hans HJ. The cybernetics of bibliographic control: toward a theory of document retrieval systems. Journal of the American Society for Information Science, 31(1) Jan 80. 41-50.

ABSTRACT

SOME CURRENT PROBLEMS IN INTERNATIONAL STANDARD BOOK NUMBERS FOR BIBLIOGRAPHIC CONTROL

by

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The advent and wide acceptance of International Standard Book Numbers (ISBNs) over the past two decades has resulted in certain advances and advantages in bibliographical control. Included in these advantages has been a more precise identification of editions and other bibliographical information. This has resulted in a more accurate identification of various publications. It has also resulted in improved bibliographical communication by increased use of ISBNs in bibliographic citations and descriptions.

Some problems have developed with the use of ISBNs, however. This paper will focus on regulations and practices of publishers (primarily those in the U.S.) in the assignment of ISBNs to materials which have been reformatted without any change of intellectual content from previous printings. One example of this is the reissuing of paperback books, often categorized as leisure reading, with new covers and new ISBNs. This results in unsuspecting consumers, including librarians, to purchase by mistake titles already in collections. These reissuings of titles of materials without intellectual, or even editorial, changes has resulted in confusion of identification, as well. In most cases, librarians, bibliographers and scholars are interested in the intellectual content of the book, not in superficial, or cosmetic, changes. Only rarely, for example, would someone be researching differences in cover art, as opposed to book, or textual, content.

An exploration of problems of this nature should result in areas which may need to be reexamined in the practice of using ISBNs in bibliographic control. This should lead, in turn, to recommendations for possible changes in the assignment of ISBNs to more carefully deliniate among publications of identical, similar, and different intellectual content.

SOME CURRENT PROBLEMS IN INTERNATIONAL STANDARD BOOK NUMBERS (ISBNs) FOR BIBLIOGRAPHIC CONTROL

C. KIES

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DEKALB ILLINOIS 60115 U.S.A.

There has been considerable interest and concern for some years in the information fields regarding certain aspects of bibliographic control. This concern has been international in nature, and as our global community continues to shrink in a communications sense, this concern has been heightened. In recent decades, we have seen this concern transmitted into problem solving, with some new systems evolving which have been helpful in the area of bibliographic control. The importance of such international systems as access to bibliographic control continues to be of interest and attention, as evidenced by a recent statement from the Association of Research Libraries (ARL) in the United States (U.S.) which declares:

> This body of machine-readable bibliographic records is not only an international resources of inestimable value in its own right, but it is also essential to scholars and researchers who wish to use the research resources of North America which are developed and preserved by member libraries.[1]

HISTORICAL DEVELOPMENT OF ISBNs

One system which has come into fairly widespread international use is the system of International Standard Book Numbers (ISBNs). First discussed at the third International Conference on Book Market Research and Rationalization in the Book Trade in Berlin during November, 1966, ISBNs were seen as a possibly helpful mechanism for publishers to use in association with new computer technologies in order processing and inventory control.[2] Additional discussion followed in the next few years, primarily in Europe, and 20 years ago the International Standards Organization (ISO) Recommendation 2108 was announced which sets forth the concept of an ISBN identifier for unique editions of different publishers' works.[3]

A Standard Book Number (SBN) had already been developed and was in use in the United Kingdom. Some U.S. publishers had already been participating in the British system. Fortunately, few changes were necessary with the formal advent of the ISBN system.[4] For the most part, the transition from SBN to ISBN went smoothly in the U.S., and the idea and practice of using ISBNs became a relatively routine operation with major American publishers. In fact, it was reported a year later in 1971 by the Director of the ISBN Agency in the U.S. that publisher prefix numbers had been issued to 2,533 publishers. Also, in 1971, it was reported that 70 percent of the titles listed in the 1970 Books in Print had titles included with ISBNs. Those publishers not requesting ISBN allocations in the voluntary ISBN system would be assigned numbers in later editions of Books in Print by the ISBN Agency.[5] The ISBN system appears to have been successful in the U.S. from the standpoint of the publishers, who use the number primarily for the purposes of identification in catalogs and for inventory control.

COMPONENTS OF THE ISBN NUMBER

It may be useful at this point to quickly review the components of the ISBN number. The actual number should always be prefaced by the initials ISBN. After a separating space, the first number appears, signifying group identifier, usually national, geographic, or language group. For example, "0" signifies material published in the United Kingdom, the U.S., Canada, Australia, New Zealand, and South Africa. After the first digit, a hyphen is inserted, followed by the number assigned to a particular publisher by the national agency responsible for administering the ISBN system in a particular country. This is followed by another hyphen and a number which identifies the title of the work. A final hyphen separates the final number, or "X", which is a check digit for the particular ISBN itself.[6]

Example 1

ISBN 0-812-551557-9

SCOPE OF THE ISBN

A number of different materials may be assigned ISBNs. The items include printed books and pamphlets, mixed media publications including educational films/video and transparencies, books on cassettes, microcomputer software, electronic publications such as machine readable tapes and CD-ROM, microform publications, braille publications and maps. Not included are ephemeral printed materials such as advertising fliers and calendars, art prints and folders lacking printed text, sound recordings and serial publications.[7]

PROBLEMS WITH ISBN FOR BIBLIOGRAPHERS

From the publishers' point of view, it would seem that the ISBN system has been quite successful in spite of recent difficulties with newer technological formats requiring clarification of the system for use with microcomputer software, for example.[8] The system has provided unique numbers for identification of titles and editions, as well as helping publishers to computerize internal operations, such as ordering ISBNs in national and trade bibliographies has helped to identify particular titles and editions for publishers, librarians, bibliographers.

The publishers have not always, however, used the ISBN to their own advantage. For example, although the ISBN guidelines plainly state that publishers should include full ISBNs on all promotional material, including catalogs, many do not. Some use an abbreviated version, the title/edition identifier, and a few still clinge to their old numbering systems, separate from ISBNs. Ironically, this has caused problem for bookstore customers in some cases, for the bookstores are increasingly using ISBNs for special orders, and should the customer not know the ISBN of a particular title, the bookstore staff may not be able to provide needed assistance.

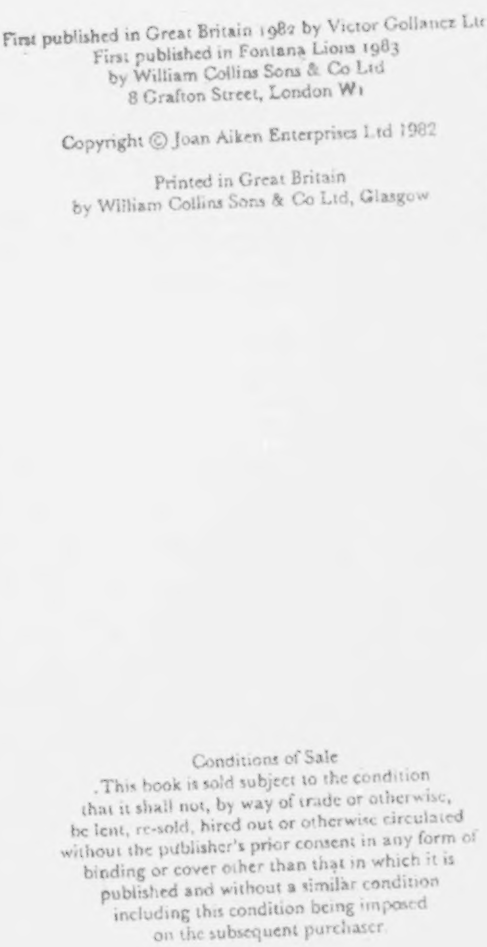
A number of other problems have evolved as well for librarians and bibliographers. One of these problems is one that is related to the growing international control of publishing houses. Even though a book may be identical as published and issued by an international publishing house, a different ISBN number may be assigned to the physical books released, for example, in the U.S. and Canada. In fact, careful examination of the two physical books may reveal absolutely no differences between the two other than a different ISBN number. The textual material may be identical, the cover design may be the same, the actual type on the individual pages may be the same, but the ISBN number if different.

Traditional practice with such publications is well known. For example, a book may be first published in hardcover in England with a new ISBN number assigned, than later reissued in paperback format with a new ISBN number and usually with the same textual material but with a new cover design. The book may then be purchased for republication in the U.S. and a new ISBN is assigned, particuarly useful if there have been textual changes, such as Americanizing some spellings and/or reordering short stories in a collection. This one title (assuming the title has not changed in the international process) now has at least three ISBNs, all entirely appropriate for the three different editions of the title. The following example shows the verso pages of the English edition and the American edition of Joan Aiken's A Whisper in the Night, illustrating fairly standard practice in publishing background:

EXAMPLE 2

Joan Aiken, A Whisper in the Night. London: Fontana Lions, 1983.

Joan Aiken, A Whisper in the Night. New York: Laurel-Leaf, 1988.



First published in Great Britain 1982 by Victor Gollancz Lt
First published in Fontana Lions 1983
by William Collins Sons & Co Ltd
8 Grafton Street, London W1

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Printed in Great Britain
by William Collins Sons & Co Ltd, Glasgow

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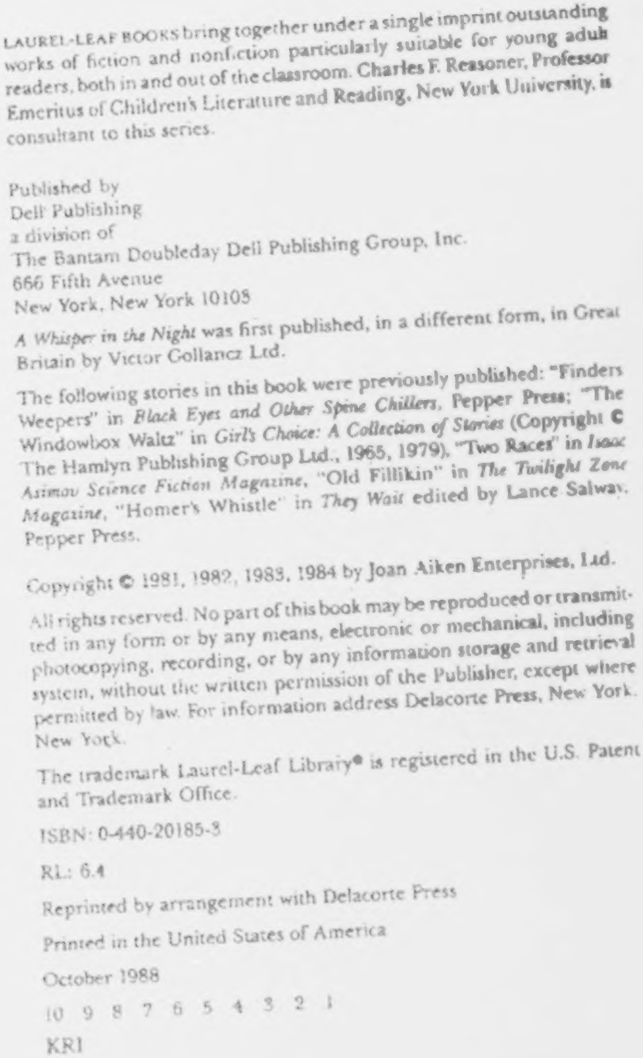
This book is sold subject to the condition
that it shall not, by way of trade or otherwise,
be lent, re-sold, hired out or otherwise circulated
without the publisher's prior consent in any form of
binding or cover other than that in which it is
published and without a similar condition
including this condition being imposed
on the subsequent purchaser.



LAUREL-LEAF BOOKS bring together under a single imprint outstanding works of fiction and nonfiction particularly suitable for young adult readers, both in and out of the classroom. Charles F. Reasoner, Professor Emeritus of Children's Literature and Reading, New York University, is consultant to this series.

Published by
Dell Publishing
a division of
The Bantam Doubleday Dell Publishing Group, Inc.
666 Fifth Avenue
New York, New York 10103

A Whisper in the Night was first published, in a different form, in Great Britain by Victor Gollancz Ltd.

The following stories in this book were previously published: "Finders Weepers" in *Black Eyes and Other Spine Chillers*, Pepper Press; "The Windowbox Waltz" in *Girl's Choice: A Collection of Stories* (Copyright © The Hamlyn Publishing Group Ltd., 1965, 1979), "Two Races" in *Isaac Asimov Science Fiction Magazine*, "Old Fillikin" in *The Twilight Zone Magazine*, "Homer's Whistle" in *They Wait* edited by Lance Salway, Pepper Press.

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RL: 6.4

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October 1988

10 9 8 7 6 5 4 3 2 1

KRI

It may be that this traditional style of assigning ISBNs has helped contribute to the problem referred to previously, that of assigning new ISBNs in unnecessary cases. The guidelines for application of ISBN are clear in stating that:

> A separate ISBN must be assigned to every different edition of a book, but NOT to an unchanged impression or unchanged reprint of the same book in the same format and by the same publisher. Price changes do not need new ISBN.[9]

This guideline seems clear, yet there is reason to believe that publishers in some cases may not be following this guideline and being too liberal in their assignment of new numbers to their publications, for there is an indication that by using ISBNs for inventory control, the publishers may assign new numbers for a simple reprinting with no changes other than the ISBN. This coupled with the rapid reprinting of some popular titles, some with slight cover changes only, such as adding "Two months on The New York Times Bestseller list!!!" makes it more difficult for acquisition librarians to be sure of what they are ordering and more difficult for bibliographers to know what particular edition is involved. Finally, scholars may waste valuable time in searching for a particular edition which may not have any textual differences at all from another more accessible edition.

In the practice of traditional bibliography, the physical description of books varies. There are no clear rules at present for descriptions of paperbacks, for example, although some catalogs of older paperbacks include a note on the cover illustrator, if known. It will probably become accepted practice to include more descriptive notes on cover information as paperback collecting increases and interest continues to grow in this area of the rare book trade. This does provide publishers with the solid rationale to assign new ISBNs. For an example of the practice of assigning new numbers with new cover art, it can be provided in a number of cases, such as a title by J. N. Williamson, Premonition, first published in 1981 by New York publisher Leisure. The cover art of the first printing showed a monochromatic realistic painting of a woman's head shrouded in grey clouds. The ISBN for this edition was 0-8439-0959-5. Apparently the book did not sell well, and a new, more lurid cover was provided later in the same year, along with a new ISBN of 0-8439-2334-2. There were no other changes in the book, other than the wraparound paper cover design.

It seems to be an ironic twist, however, that bibliographers are not as likely to include information on the ISBN of a particular item as they are other more "traditional" descriptive notes, such as size of the title being examined. As a result of bibliographers not always including ISBNs and publishers not practicing careful, unified criteria for assigning ISBNs, there is often uncertainty in knowing what exact physical book is being described in a bibliography.

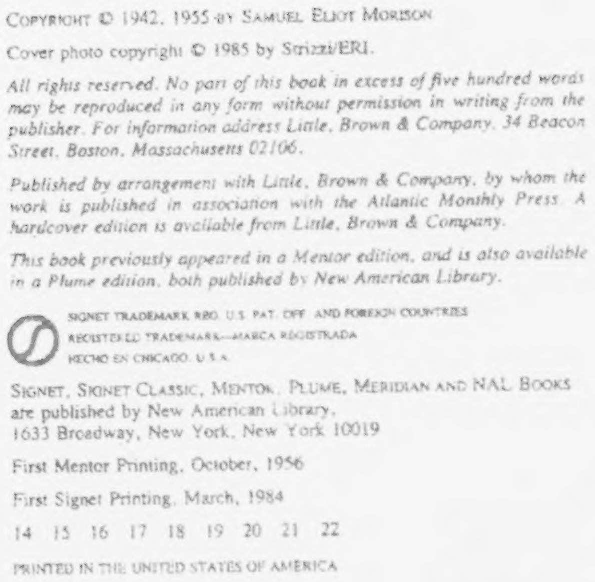
To continue with this problem of bibliographic identification in cases of no textual changes and only slight cosmetic cover changes, it appears that the publishers are technically correct in assigning new ISBN numbers, although the guidelines do state that new numbers should not be assigned if only the price of the book has changed. The possibly rapidly changing ISBNs of popular titles makes purchasing difficult, for publishers and suppliers do not always keep track of older ISBN assignments, other than knowing a particular number may be "out of stock" or "out of print." The title may be readily available, but under a new number, and the growing reliance upon the ISBN as an inventory control system may mean a new sort of unavailability to customers who are using old ISBNs from older catalogs. Tracking ISBNs has become an extremely difficult new aspect of bibliographic tracing, primarily because the publishers do not include ISBN information on the verso of the title page as set forth in the guidelines. This information should appear in addition to the publishing history already on that page, sometimes called the copyright page.

It was thought with the advent of the ISBN system that publishers would include the ISBN evolution of publication history of the title along with the publishing provenance of the title. This has not happened, however. For example, a recently issued paperback entitled Christopher Columbus, Mariner by Samuel Eliot Morison contains much careful description of the title's history on the verso of the title page, but no ISBNs are given there at all, including the ISBN of the current edition. The ISBN appears only on the spine and back of the book. The verso information includes the codes showing that this book is part of a particular printing, and one can also deduce that this particular issue was first published in 1984. Yet, there is additional information that indicates the cover photograph was copyright in 1985. It seems very plausible that this particular paper back was put out as a media tie-in, for the cover photograph is from a television mini-series based on this well-known biography.

EXAMPLE 3

Verso of the title page: Samuel Eliot Morison, Christopher Columbus, Mariner. New York: Signet, 1984.

ISBN 0-451-13879-1



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This book previously appeared in a Mentor edition, and is also available in a Plume edition, both published by New American Library.

SIGNET TRADEMARK REG. U.S. PAT. OFF. AND FOREIGN COUNTRIES
REGISTERED TRADEMARK—MARCA REGISTRADA
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are published by New American Library,
1633 Broadway, New York, New York 10019

First Mentor Printing, October, 1956

First Signet Printing, March, 1984

14 15 16 17 18 19 20 21 22

PRINTED IN THE UNITED STATES OF AMERICA

THE PUBLISHERS' VIEWPOINT

In discussion of these matters with publishers, different rationales are used to explain the practices of various publishers with the assignment of ISBNs. The most difficult area appears to be the unwillingness of some publishers to print even the current ISBN on the copyright page, particularly with paperback editions. There seems to be the feeling that the ISBNs printed on the spine of the paperback, along with the bar code on the back cover is sufficient, although there is some admission that not putting the ISBN inside the book means no changes in the inside book when a cover change only is contemplated. It is more difficult to obtain valid reasons for not including ISBN sequences along with the publishing history on the copyright page, but one is left with the feeling that this information isn't considered necessary, i.e., not required by law as is the copyright information, and that only the currently assigned ISBN is of importance in the selling process.

Discussion with publishing representatives confirms that the current practice of assigning new ISBNs even with only slight cover changes is dictated primarily by inventory control. Problems with filling orders when older ISBNs are used are not acknowledged, since it is felt that "internal systems take care of that problem." There is some admission that occasionally there may be orders that are not filled as well as they might be, but the few sales lost in that way are more than equalized by the cost effectiveness and efficiency of the systems currently in use.

Finally there is a tendency within some publishing houses to pass the responsibility for the actual decision in assigning a new ISBN to someone else, e.g., the ISBN assignments are made by one person, based on information decisions sent by others.[10]

OTHER PROBLEMS WITH ISBN

Additional problems exist for librarians in connection with ISBNs. One of these is related to the practice of assigning ISBNs to a multi-volumed set as a whole and to each separate volume in the set. The guidelines state that publishers should do this routinely, and in promotional material publishers should use the ISBN for the whole set if promoting the set as a whole, as the single ISBNs if promoting the separate volumes.[11] This practice, of course, drives catalogers to distraction, if not worse, for not only is it not customary in libraries to catalog such sets both as complete sets and separates, but in the case of continuations, it may be more appropriate to use an International Standard Serial Number (ISSN) instead.

An associated problem is that of regularly published new editions of reference works which may be cataloged as a serial but the publisher assigns each new edition/volume an ISBN rather than a unifying ISSN.

The ISBN area of concern which has received the most attention in recent years is the area of microcomputer software/audio/video formatted materials. The growth of publishing/production of these materials in recent years has brought about considerably increased volume in the bibliographic control system. The ISBN International Agency in Berlin ruled that microcomputer software should be numbers within the existing ISBN system, rather than creating a new data base. As an example of the growth in this one area alone, it was reported in 1985 that 39% of the ISBNs in the U.S. were being allocated to software.[12]

The practice of ISBNs in use with microcomputer software is not different from practices with print format items. As a result, the same problems have come about for librarians, purchasers and scholars. The history of the development of the software lacks a tracking of the ISBNs involved. With software sets consisting of more than one item which can be used separately, different ISBNs may be assigned to the individual pieces as well as the set as a whole. Minor changes/improvements in the software may or may not be given a new ISBN. This last item is somewhat different from print formats in the ISBN guidelines, for these state in connection with software:

> No new ISBN should be assigned for a revision or enhancement of a software. Usually these improvements makes the earlier version obsolete and not available for continuous sale.[13]

Regardless of the actual guideline, publishers of software may assign new ISBNs anyway, again for inventory control purposes.

RECOMMENDATIONS AND CONCLUSION

A number of problems concerning ISBNs have been identified. As with any system, there is room for improvement and the possibilities for a number of different groups to contribute to this improvement. Some possibilities for improvement include:

1. Better utilization and care in the recording and use of ISBNs. Publishers should be encouraged to include ISBN provenance along with publishing history on the verso/copyright page of all publications.

2. Bibliographers should take care to record ISBNs as part of books identification when describing items in bibliographies. When possible, bibliographers should include ISBN history along with printing history when discussing various titles.

3. Consideration be given to clarification of the ISBN so that minor cosmetic changes could be allowed for within the current system. Should greater care be taken with describing ISBN along with publishing history as recommended in item 1., this would not be necessary. The guidelines currently allow for an addition of five optional digits to the ISBN. It is suggested that publishers can use this for price, but it might be possible to use this number sequencein a different way in

order to help differentiate editions/reprintings.

4. Continued discussion between publishers and librarians in matters of this sort in order to encourage a more smoothly working system that will be beneficial to all.

REFERENCES

1. Association of Research Libraries. "ARL Statement on Unlimited Use and Exchange of Bibliographic Records." Washington, D.C.: The Association, 1989.

2. International ISBN Agency. "The ISBN System Users' Manual." Berlin: International ISBN Agency, 1986: 4.

3. Ibid. 4-5.

4. Emery Koltay. "International Standard Book Numbering." In: *The Bowker Annual of Library and Book Trade Information, 1970.* New York: Bowker, 1970: 73.

5. Emery I. Koltay. "International Standard Book Numbering." In: *The Bowker Annual of Library and Book Trade Information, 1971.* New York: Bowker, 1971: 107-8.

6. American National Standards Institute, Inc. "American National Standard for Book Numbering." ANSI Z39.21-1980. New York: The Institute, 1980.

7. International ISBN Agency: 8-9.

8. Sally H. McCallum. "Information Standards in 1987." In: *The Bowker Annual of Library and Book Trade Information.* 23d ed. New York: Bowker, 1988: 44.

9. International ISBN Agency: 11.

10. Information regarding publishers' practices in regard to ISBNs was gained in interviews with employees of publishers in the Chicago area, May, 1989. Anonymity was guaranteed to the interviewees.

11. Emery I. Koltay: 108.

12. "Networking in 1984." *The Bowker Annual of Library and Book Trade Information.* New York: Bowker, 1985: 60.

13. "ISBN Assignment to Microcomputer Software." New York: Bowker, n.d.

CONSER : A MODEL COOPERATIVE CATALOGING PROJECT

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Abstract

This paper describes the conser project, why it came about, the mechanics of how it works including the bibliographics format, difficulties encountered by organizers, and how the bibliographic information can benefit and be used in overseas libraries.

CONSER: A MODEL COOPERATIVE CATALOGING PROJECT

I. INTRODUCTION

In North America the CONSER Project has significantly improved the bibliographic control of serials as well as the quality of serials cataloging. It is a cooperative program whose mission is

> "to build and to maintain cooperatively a comprehensive machine readable database of authoritative bibliographic information for serials publications; to uphold standards and to exercise leadership in the serials information community". (1)

Initially the project was a cooperative conversion project among ten research libraries and the national libraries of the United States and Canada. The project's original goal was to convert 200,000 printed serial records into machine readable format. By December of 1988 the CONSER database had over 677,000 serials records of which 118,000 are for currently published titles. (2) In order to emphasise the long term status of the project and to account for the significant projects and developments such as the NATIONAL SERIALS DATA PROGRAM/UNITED DATES POSTAL SERVICE PROJECT, NEW SERIALS TITLES MAGAZINE, UNITED STATES NEWSPAPER PROGRAM, and CONSER ABSTRACTING AND INDEXING COVERAGE PROJECT which had grown out of CONSER, the full name was changed to COOPERATIVE ONLINE SERIALS PROGRAM. The acronym CONSER remained the same.

The first participants used the MARC SERIALS EDITING GUIDE agreeing to use the same conventions and practices for cataloging the serial records. The most recent rules, conventions, and practices are published in the newest edition of the MARC SERIALS EDITING GUIDE. Since librarians can easily acquire this edition from the Library of Congress, this paper will not focus upon the conventions and practices of the CONSER cataloging rules and practices, but will instead outline the development of CONSER and related projects, point-out problems encountered by the participants, describe its current management structure and operations as well as discuss its significance as both a cataloging tool and model for Cooperative Cataloging ventures.

II. HISTORY

A. Conception and Early Implementation (1973 - 1977)

In 1973 a group of North American serials librarians recognised the need for a machine readable serial cataloging database that would reduce the duplication of the time, money, and effort needed to convert paper serial records to machine readable format. However creating and authenticating serial records is a difficult task. Unlike monographs, serials constantly change: titles merge and split; frequencies alter, publications cease only to be resurrected; names change; and prices increase. It was also recognized that the existence of three major barriers prevented the rapid building of a comprehensive database:

1. The lack of communication among the generators of machine-readable serials files
2. The incompatibility of format and/or bibliographic data among existing files.
3. The apparent confusion about the existing and proposed bibliographic description and format "standards." (3)

With funding from the Council of Library Resources, the original participants contracted with OCLC to provide a "temporary host" database because it could facilitate both batch down-loading and online cataloging.

In the beginning the project did not intend to establish any new standards or cataloging policies.

> "Its leaders planned to create a database that could accommodate past, present, and future standards of format, description and identification. However, the group recognized the need to reconcile conflicts among existing standards and policies such as the Library of Congress MARC-Serials format, the National Serials Data Program internal format, the International Serials Data System Guidelines and the draft of the Canadian MARC serials format." (4)

After many meeting the librarians agreed to follow an uniform set of practices and guidelines for the creation of the records which became known as the "agreed-upon practices" and later, the CONSER EDITING GUIDE.

The Library of Congress (LC) and the National Library of Canada (NLC) agreed to become "Centers of Responsibility" to verify certain data elements according to AACR and the ISDS Guidelines. In addition the National Serials Data Program in both Canada and the United States verified the ISSNs and key titles. "This verification process was referred to as authentication". (5)

In 1975 the participants began to change their printed records into machine readable format.

> "Participants received LC training in 1975 and began online work in the Spring of 1976. Bibliographic records for titles were claimed or created, modifications were made online when possible, and surrogates (photocopies of parts of publications to support the bibliographic description) were sent to the appropriate Centers of Responsibility to support authentication work". (6)

Preliminary work was given a tremendous boost when in the Winter of 1976 the Minnesota Union List of Serials as well as existing LC and NLM records were down loaded into the database. Later serial records from the Pittsburgh Regional Library Center and the Florida Union List of Serials were entered into the database after vigorous review.

B. Phase Two -- OCLC management, Growing Responsibility of Member Libraries, and New Projects (1977-1983)

In 1977 fiscal constraints prevented LC from being able to support CONSER managerial and automation responsibilities. Although the primary decision making continued to be exercised by CONSER participants, late in 1977 OCLC agreed to become the facilitator and manager of the CONSER database. Thus the role of OCLC changed from that of "temporary host" to that of "host data base".

The second phase from 1977 to 1983 was also characterized by two developments. The first was the greater responsibility and authority for individual members. LC and NLC maintained some operational authority and began to provide extensive training programs for full participants. As time passed the participants became more familiar with the "agreed upon practices" and began to assume more responsibility. The U.S. Government Printing Office became the first institution to submit name authority records to the LC Name Authority File and by 1981 all members were contributing their authority files to LC.

The second characteristic was the increased use of the database for other projects. Because of the accurate bibliographic information, CONSER was perceived as a valuable source. Not only were the projects able to take and use CONSER information, but there participants also added or verified data enhancing and improving the database. (7) Some of these projects are described below:

NATIONAL SERIAL DATA PROGRAM

In 1978 the United States Postal Service (USPS) and the National Serials Data Program (NSDP) began a major cooperative effort to implement mandatory printing of the ISSN on serials mailed at special rates throughout the Unites States mail. NSDP convinced the postal service to use the ISSN number when billing publishers. CONSER first helped by providing a comprehensive, reliable source for ISSNs. Secondly, with grant money from the Council of Library Resources, participants sent letters to publishers and obtained "surrogates for NSDP to assign the ISSN for those titles." (8)

NEW SERIALS TITLES

NEW SERIALS TITLES (NST) is a Union Catalog for journals produced by the Library of Congress. Currently, entries include such information as place of publication, publisher beginning and ending dates, and frequency of publication. Following the bibliographic citations are a list of the holdings for each of the contributing libraries. Listing the holdings information became much easier and accurate in 1981 when the holdings location information from the MARC-Serials file 850 field was added into CONSER records by NST staff as reports were received from its participating libraries. This process allowed issues of NST to be generated from the file of authenticated CONSER records. NEW SERIALS TITLES is now a much more useful tool because of its broader coverage and fuller records. (9)

UNITED STATES NEWSPAPER PROGRAM

In the early 1980s a new program called the United States Newspaper Program (USNP) was established to organize, preserve and make available U.S. newspapers by the National Endowment for the Humanities. The program's goal was to inventory and catalog 300,000 newspaper titles published in the United States from 1690 to the present. In 1983 USNP became a partial CONSER participant and began to enter records with detailed holdings information of each state, territory and repository within the United States. (10)

CONSER ABSTRACTING AND INDEXING COVERAGE PROJECT

A cooperative project between CONSER and eighty-five abstracting and indexing services began in 1983 in order to improve title coverage and to identify where serials were indexed and abstracted. Each abstracting and indexing service provided lists of their title coverage information and these lists were then searched against records within CONSER. The project identified a small number of subject specific titles that had been previously excluded from the CONSER database. In addition the abstracting and indexing information was added to each CONSER record thereby making it possible for researchers to learn where titles are indexed. (11)

C. New Challenges and Changes (1984 and 1985)

By 1984 the projects initial goal of creating over 200,000 machine readable records had been achieved and exceeded far beyond the founders wildest dreams. The responsibility of members continued to grow as they began to authenticate their own serial records and to make modifications to records previously authenticated by LC. New members continued to join the project and contributed their serial records.

However, CONSER faced two new challenges. The first being that several of the original members opted to change from OCLC to the Research Libraries Information Network (RLIN). Consequently these members no longer directly participated as there was no mechanism for them to load records into the OCLC database. Because participants were assuming more responsibility for authenticating records and some original members records and expertise was no longer available, issues in database maintenance were identified as important problems in need of resolution. (12)

The second challenge gained attention when the second edition of the Anglo American Cataloging Rules (AACR2) was published. Previously the database had records cataloged according to CHAPTER 6 RULES and new records were being entered according to AACR-1 and the "agreed to CONSER policies and rules". With the advent of AACR-2 it became clear that the earlier policies and rules needed to be reviewed and in some cases altered. It also raised issues in regard to the standardization of the CONSER database.

To solve these problems CONSER librarians deliberated over the rules in many long meetings. Most members felt that it was more important to emphasize online cataloging rather than retrospective conversion. The reason being that more new records were being added instead of paper records being changed to machine readable formate. Finally, the policies were altered and a "new" AACR-2 based CONSER EDITING GUIDE was published that stressed online cataloging. (13)

As to the problem of database standardization many problems still exist. There are in fact many duplicate records that have been entered according to different rules. However, OCLC has taken steps to improve the situation. Recently, their computer experts ran a machine conversion that set flags in the records indicating the set of rules used to catalog the records. However, the main headings and subject headings were not altered. (14)

D. New Directions (1985 - present)

To commemorate the tenth Anniversary of CONSER the library of Congress sponsored a study to make recommendations about CONSER's future role. Researcher Julia Blixrud and Jeffrey Heynen concluded that the CONSER Project had been a tremendous success; however, "CONSER's management structure, decision making processes, membership procedures, and general operations" needed improvement.

Throughout 1985 and 1986 planning meeting were held and two ad hoc CONSER committees drafted proposals regarding membership issues, goals, objectives, structure, and operating procedures. Finally in November of 1986 at the Arlie House retreat representatives of the CONSER Advisory Group and CONSER Participants Group met to reorganize and revitalize the project. A new name was adopted to convey the permanent status of CONSER. The organizations name was changed from CONversion of SERials Project to Cooperative ONline SERials Program.

Five new goals were adopted which reflect the change from a retrospective conversion project to a program:

1. The CONSER database should be a widely available source of authoritative bibliographic information about serials.

2. The membership will consist of institutions committed to participating in the CONSER Program at a national and international level with potential local and regional applications.

3. The CONSER Program should operate in a cooperative manner with an effective and efficient governance and management structure.

4. The CONSER Program should support and promulgate standards and establish necessary standardized practices for the bibliographic control of serials.

5. The CONSER Program should exercise leadership in the fields of serials management and education and CONSER achievements should be promoted. (15)

III. MANAGEMENT

The CONSER program is managed by three standing committees, task forces, and ad hoc groups who address specific issues. The first committee is the CONSER Policy Committee which is composed of one representative from each National Library, OCLC, and one representative from each institution registered as a full participant. The purpose of the committee is to review and approve plans, goals, and objectives as well as develop long term plans and policies. The committee also approves new members.

The CONSER Executive Committee recruits members from the CONSER Policy Committee and is composed of representatives from LC, NLC, OCLC, the chair of the CONSER Policy Committee and one other full participant. It is a small working group that reviews new member applications, drafts agendas for the CONSER Policy Committee and makes internal policy decisions. The CONSER Operations Committee also identifies reviews and documents operational procedures.

Currently there are seven task forces which are investigating the following issues:

1. Database Task Force responsible for database maintenance and retrospective conversion.
2. Microtechnology Task Force investigating means by which CONSER Participants not working with OCLC, or unwilling to use OCLC can contribute records to the CONSER database.
3. Vernacular task force studying the methods of inputting non-roman alphabet languages within CONSER.
4. Multiple Versions Task Force examining the best method of representing the multiple physical manifestation of a serial in the CONSER Database.
5. Format Integration Task Force now considering the issue involved in the implementation of the US Marc integrated format in the CONSER environment.
6. Statistical Task Force is now creating useful statistics to help monitor costs and performance.
7. Macrotechnology Task Force is considering broad issues related to record transfer. (16)

Finally CONSER is advised by members of the CONSER Advisory Group whose members are recruited from national libraries not active in CONSER as well as library associations. Advisory members review the progress of CONSER and inform constituents. Current members include the American Library Association, the Association of Research libraries, the National Federation of Abstracting and Information Services, the National Library of Australia, and the Canadian Library Association. (17)

IV. OPERATIONS

CONSER participants continue to be linked together by OCLC; the predominant online system in the United States. When a participant adds a new serial record or modifies an existing record, they must ensure that the records data content and content designation conforms to the CONSER EDITING GUIDE. Full Participants authenticate the record by reviewing the serial record for data content and content designation. Each members record is identified with their OCLC symbol in the 040 field of the MARC record. Full participants may also create name authority records for the LC Name Authority file and report new titles to the editors of NEW SERIAL TITLES.

Partial members who have specialized expertise may also enter data; however, they may only update certain fields of the record. As an illustration EBSCO's duty as a partial CONSER participant is to up date the rate information in the CONSER records. Similarly, the National Serial Data Program staff update the International Standard Serial Numbers (ISSNs). If only certain fields of the record are altered these elements must be identified to indicate the degree of authoritativeness of the data. (18)

V. SIGNIFICANCE OF CONSER

In the international arena CONSER has made two meaningful contributions. It is a comprehensive database and provides extensive bibliographic control of Western Language materials, especially English language materials. Accuracy is very high and the bibliographic detail comprehensive. International librarians do not have to duplicate the work of their North American colleagues but can instead benefit from their labours. For example, CONSER records can be down loaded into local databases from the Library of Congress's CONSER tapes or from CD-ROM databases such as EBSCO's Serials Directory.

Secondly, the planners and participants of CONSER have provided a model. They have demonstrated that it is possible to form a successful cooperative cataloging venture, even in the vexing field of serials. In fact much can be learned by both the problems and the successes of CONSER.

One significant issue, the degree of standardization imposed upon the database, is proportionally related to both the failure and the success of CONSER. Although records have been authenticated, there are many duplicate records because different cataloging codes have been used. Nevertheless, enough standardization has been introduced to permit valuable spin-off projects to emerge because of the accuracy and reliability of the data.

With many participants adding records, the quality of the input is of great concern. Yet, the quality of CONSER records is commendable. CONSER participants were able to succeed by first having LC and NLC act as "Centers of Responsibility" until members were proficient with the new "agreed to" cataloging procedures. Second, LC and NLC spent both time and money training participants. Third, partial participants with special expertise were permitted to update or change relevant fields.

Another concern with multiple participants is the problem of continuity when members decide to withdraw. In the CONSER example some original members decided to depart from OCLC and thus the project. It was then uncertain as to whom would update their bibliographic records when titles changed or ceased. In fact database maintenance is an important CONSER issue which is still being resolved.

Finally, the decision to build the CONSER database within OCLC instead of creating a new database, has had both advantages and disadvantages which have influenced the development of CONSER. On the positive side it was possible for the project to immediately commence because most libraries had OCLC terminals and staff members were familiar with OCLC procedures and formats. Also expenses have been greatly reduced because it has not been necessary to purchase hardware or hire software programmers. Throughout CONSER history OCLC has offered valuable assistance and expertise. In some instances OCLC staff have provided technical support and in other cases they have been actively involved in upgrading and improving CONSER records.

However, it can be argued that OCLC's involvement has stunted some aspects of growth. The reason being that OCLC's interests and those of CONSER sometimes conflict. The RLIN issue is a case in point. OCLC's serial holdings and services have been greatly enhanced by the CONSER database and it is not in OCLC's interest to give the same advantage to their competitor RLIN. Librarians on the other hand want to disseminate CONSER cataloging to RLIN members and recruit their assistance. Linking up OCLC and RLIN is technically possible, but political and economic issues will first have be resolved. Further, OCLC has opposed the membership of other commercial institutions. Librarians, on the other hand, have actively tried to recruit such institutions because of their specialized knowledge and expertise.

Since management decisions continue to be made by the CONSER committees, these difficulties can and have been overcome. But such problems would not exist if the database was owned, controlled, and maintained by CONSER instead of being housed within the OCLC database.

VI. CONCLUSION

Because of the quality of the CONSER records, international libraries can use them for retrospective conversion or to catalog new titles. Thus, these records can form a core database of Western language materials. However, CONSER reflects the bias and acquisition policies of North American libraries and will not list most Asian language titles. Further to be a CONSER member a library must first be an OCLC member. Unfortunately, OCLC membership is not possible for most libraries. The reason being that the telecommunication costs required to link up with the database are too high. As a result CONSER can not adequately meet Asian librarian's needs for bibliographic control over local titles.

Since bibliographic control is a fundamental prerequisite for high quality reference services, it is not surprising that many Asian librarians are considering cooperative cataloging projects. The existing technology, expertise, and interest now render national cooperative cataloging projects as reasonable ventures. Programs such as CONSER can contribute bibliographic records, reference tools such as the CONSER EDITING GUIDE and can act as models. However, the development of Asian cooperative cataloging projects will be determined by librarians indigenous problems and aspirations for high quality library services and bibliographic control.

END NOTES

(1) *CONSER Editing Guide*, prepared by staff of the Serial Record Division under the direction of the CONSER Operations Coordinator (Washington, DC: Serials Record Division, Library of Congress, 1986) Section A1, p. 2.

(2) Emmy S. Carmichael, Ebsco Publishing Coordinator responsible for the Ebsco Serials Directory in a memo to Carolyn Norris dated May 24, 1989. Ebsco currently has 125,000 serial titles on the *SERIALS DIRECTORY/EBSCO CD-ROM*. "Of the 125,000 titles approximately 118,000 are active currently published serials with the remaining 7,000 being cessations. Ebsco's goal is to have every currently published serial title available on the CD, with as many cessations withinn the past three years as possible. The reason the CONSER tapes contain some 677,000 records is due to the number of ceased titles and duplications within the database (there can be five or six records for the same title)"

(3) *CONSER Editing Guide*, Section A2, p. 1.

(4) Ibid., Section A2, pp. 2-3.

(5) Ibid., Section A2, p. 4.

(6) Ibid., Section A2, p. 5.

(7) Linda K. Bartley and Regina R. Reynolds, "CONSER: Revolution and Evolution," in *Cataloging and Classification Quarterly* 8(Fall 1988), pp 50-52.

(8) Ibid., p. 51.

(9) Suzanne E. Thorin, "New Serial Titles has a New Look," in *LC Information Bulletin* 47(July 25 1988), pp 313-314.

(10) *CONSER CONSER CONSER CONSER: Cooperative Online Serials Program*, (Dublin, Ohio: OCLC,1988) p. 4.

(11) Ibid., p. 4.

(12) Linda K. Bartley and Regina R. Reynolds, p.p. 53-54.

(13) *CONSER CONSER CONSER CONSER: Cooperative Online Serials Program*, pp. 1-2.

(14) Mary Beth Vanderpoorten, Librarian in charge of Ebsco's Title Information Department in a memo to Carolyn Norris dated May 24, 1989. "OCLC did a conversion, by machine, to set a flag in the records indicating if they are AACR II, AACR, or "Chapter 6"rules. THe main entries and subject headings were not changed. Libraries may go in and convert their entries and change the flag. The encoding level on the records indicate which were applied. Not all CONSER records have been converted."

(15) *CONSER Editing Guide*, Section A1 p.2.

(16) "CONSER Policy Committee Meets at LC", *CONSER Cooperative Online Serials Program*, 14(December 1987), p. 1.

(17) *CONSER CONSER CONSER CONSER: Coperative Online Serials Prgram*, p. 3.

(18) Ibid., pp 4-5.

APPENDIX A

CONSER PARTICIPANTS (Full Membership)

1. Boston Theological Institute
2. Center for Research Libraries
3. Cornell University
4. Harvard University
5. Indiana University
6. Library of Congress
    National Serials Data Program
    New Serial Titles
7. MINITEX (Minnesota Union List of Serials)
8. National Agricultural Library
9. National Library of Canada
    ISDS/Canada
10. National Library of Medicine
11. New York State Library
12. State University of New York
13. United States Department of the Interior
14. United States Government Printing Office
    Periodicals Supplement
15. University of California, Berkeley
16. University of California, Los Angeles
17. University of Florida, Gainesville
    Florida Union List of Serials
18. University of Georgia
19. University of Michigan
20. University of Pittsburgh
21. University of Texas at Austin
22. University of Washington
23. Yale University

APPENDIX B

ASSUMPTIONS OF THE CONSER PROJECT

1. The CONSER record is a bibliographic record which serves as a foundation for a wide variety of applications or projects, such as acquisitions, preservation, resource sharing, union listing, and the like. The CONSER records is a bibliographic record for a serial that has been authenticated by at least one participant in the CONSER Program.

2. While not precluding the addition of data elements to the CONSER records, the database is not intended routinely to provide all the data elements required to support fully such activities.

3. The CONSER database aspires to achieve comprehensiveness through gradual and phased expansion, with an emphasis on current coverage and North American interests, but to encompass eventually all time periods and international interest.

4. The ideal of comprehensiveness should include full coverage of serials in all formats, scripts, languages, and on all subjects.

5. The CONSER record should be accurate and provide unambiguous identification of the item cataloged. This is achieved through creation of records conforming to standards and standardized practices, i.e., the authentication process.

6. Serials do not remain static; neither can the records describing them.

7. All reasonable efforts are made to maintain the accuracy of CONSER records, with a concentration placed on reflecting in the record those changes occasioned by the publication itself.

SERIAL DIRECTORY RECORD FOR INTERCIENCIA

Subject: Science(General)
Title: INTERCIENCIA.
Date/Vol: V. 1-May/June 1976-
ISSN: 0378-1844
Ser type: Periodical
Country: VE
Language: Multilingual (English, Portuguese and Spanish)
Frequency: Bimonthly
Price: $55.00 (institutions) Venezuela; $15.00 (individuals) other
Publisher: Interciencia
Apartado de Correo 51842
Caracas 1050A Venezuela
Telephone: (582)92-32-24
Editor(s): Marcel Roche
Ind/Abstr: Coal Abstracts, International Aerospace Abstracts, Biological Abstracts, GeoRef, Energy Research Abstracts (Feb. 1977-), Energy Information Abstracts, Life Sciences Collection, Current Contents, Chemical Abstracts (1976-1983), Science Citation Index, Environment Abstracts, Soils and Fertilizers, Helminthological Abstracts. Series A, Animal and Human Helminthology, Helminthological Abstracts. Series B, Plant Nematology, Protozoological Abstracts
LC Class: Q4
DD Class: 505
NLM Class: W1 IN671
CODEN: ITRCDB
CONSER: 02513645
Ind Avail: Index available
Cumulative index available
Bk Review: Yes
Advertise: Yes
Circulatn: 1,500
Descript: Problems related to development within Latin America: amazonia, nutrition, energy, health and population, arid land, marine and earth sciences, tropical agriculture and environmental problems, science policy and short communications.

APPENDIX C SECTION 2

CONSER FORMAT FOR INTERCIENCIA

```
  Entrd: 761019 Govt Pub:     Lang: mul  Source: d  S/L ent: 0
   Repr:        Conf Pub: 0  Ctry: ve  Ser typ: p  Alphabt: b
  Index: u      Phys med:     Cont:       Frequn: b   Pub st: c
Cum Ind: u      Titl Pag: u  ISDS:       Regulr: r  Mod rec:
  Dates: 1976-9999

TAG IND MARC DATA

001     OCM02513645
010     $a   76645718
022     $a0378-1844
030     $aITRCDB
032     $a514610$bUSPS
035     $a(OCoLC)2513645
035     $a(DNLM)I19040000(s)
040     $aDNLM$cDNLM$dDLC$dNSDP$dDLC$dOCoLC$dNSDP$dOCoLC$dNSDP
        $dOCoLC$dSER$dNST$dRCS$dNST$dNSDP$dAIP$dNST$dAIP$dNST
        $dNSDP
041 0   $aengporspa
042     $alc$ansdp
043     $acl-----
050 0   $aQ4$b.I617
060     $aW1 IN671
070     $aQ1.A115
082     $a505
210 0   $aInterciencia
222 0 0 $aInterciencia
242 0 0 $aInterscience.$yeng
245 0 0 $AINTERCIENCIA.
260 0 1 $a[Caracas, Venezuela,$bAsociaci•on Interciencia]
265     $aInterciencia, P.O. Box 19315, Washington, DC, 20036
300     $av.$bill.$c28 cm.
310     $aBimonthly
350     $a$15.00 (individual)$a$25.00 (institution)
362 0   $av. 1-    May/June 1976-
510 2   $aBiological abstracts$x0006-3169
510 2   $aChemical abstracts$x0009-2258$b1976-1983
510 2   $aCoal abstracts$x0309-4979
510 2   $aEnergy information abstracts$x0147-6521
510 2   $aEnergy research abstracts$bFeb. 1977-$x0160-3604
510 2   $aEnvironment abstracts$x0093-3287
510 2   $aGeoRef$x0197-7482
510 2   $aInternational aerospace abstracts$x0020-5842
510 2   $aLife sciences collection
546     $aEnglish, Portuguese, and Spanish.
650   0 $aScience$xPeriodicals.
650   0 $aTechnology$xPeriodicals.
650   0 $aScience$zLatin America$xPeriodicals.
650   0 $aTechnology$zLatin America$xPeriodicals.
650   2 $aScience$xperiodicals.
650   2 $aTechnology$xperiodicals.
710 2 0 $aAsociaci•on Interciencia.
850     $aCU-I$aCU-S$aDGW$aDLC$aFU$aGASU$aGEU$aICU$aIaAS$aKyLoU
        $aLNT$aLU$aMCM$aMnSU$aNN$aNSyU$aNcD$aOrCS$aPPD$aTxCM
        $aTxU$aULA$aViBlbV$aWU
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INFORMATION RETRIEVAL IN MULTIMEDIA SOURCES IN AN ELECTRONIC AGE

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Abstract

An imposing array of online databases and the rapid growth of optical discs have revolutionalized information storage and retrieval processes. The new technologies feature speed and capability of multi-access points and multi-dimensional approach, which make them an ideal tool for information retrieval. There are, however, problems due to shortage of bibliographical control of multi-media sources, lack of uniformity in data structure, and diversity in retrieving information. The paper will discuss information retrieval using major online database systems and CD-ROM products from a user's point of view. Major online systems which include BRS, DIALOG, ORBIT and Wilsonline as well as representative CD-ROMs will be included in the discussion. On CD-ROM, particular attention will be focused on ERIC which is available on DIALOG Ondisc, SilverPlatter, and OCLC. The paper will summarize the problem of diversity in information retrieval, note the improvements, and present observations for future developments.

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A cartoon that appeared in the Chicago Tribune depicts a reference librarian receiving a call. The party on the other line asks: "Is this the library? Please analyze Shakespeare's plays and give me a list of quotes reflecting aspects of existentialist thought. I'll hold on." It is humanly impossible for the reference librarian to provide this information in a short period of time. However, in an electronic age, it may not be a mission-impossible. A television series, the Knight Rider, dramatizes a car that not only can converse like a human being but is also able to provide answers to any questions asked. In a scenario envisioned by science fiction writers, a reader can browse through a computer catalog and call for books which will be delivered to him by a robot from the stacks, or a reader can retrieve three dimensional information from an encyclopedia or a hard copy dropped on his lap.[1] Though it sounds like a fantasy, the reality may not be too far away.

In his keynote speech at the 1987 EDUCOM conference, John Sculley mentioned three technologies that offers a new environment for gathering knowledge: hypermedia delivering information beyond the traditional media; simulation pushing the knowledge boundary from static to dynamic; and finally, artificial intelligence.[2] Dialog Information Service added to its service in 1988 the provision of images in the TRADEMARKSCAN - FEDERAL database.[3] The Encyclopaedia Britannica will market very soon its Compton Electronic Encyclopedia in hypermedia in which the reader will be able to have texts, sound, and image in color.

In the last three decades, we have seen a significant array of new technologies for storing and retrieving information: microform in the 1960s, online database in the 1970's, and CD-ROM in the 1980's. Microform is a generic term including micro-print, microfilm, microcard, microform, and microfiche. The development of microform goes back to 1839 and microfilming printed products began in the 1930's.[4] In the 1960's, microforms became a fashionable phenomenon for information storage. In 1969 alone, the Library of Congress produced more than 11.3 million individual microfilm exposures on negative films and more than 5.6 million feet of positive print film from these and other negatives.[5] The density of microform recording ranges from 4 times to 1,000 times or even higher of its originals. A conventional microfiche provides about 900 pages per fiche. A microform with high range of density has the capacity of recording about 2,000 pages per fiche and can hold, with extreme range of density, the full text of a bible within one square inch of space. Microforms are excellent for storage and preservation and the least expensive. But the search of data in microform is slow and it lacks voltarity and multiple access points.

Although the growth of microform has not been as fast as many people had anticipated, there has been an increased interest in recent years in using microform for storage and preservation of materials. Charles Chadwyck-Healey compared microform with videodisc technology and concluded that microforms will continue to be used until electronic technology in storage and transmission of data equals or improves microform in quality and cost.[6] Alan Calmes regards microfilm the best choice for storage and preservation on three grounds: its life expectancy is longer than all other media; its use life is far less limited; and its maintenance cost is lower.[7] He also reports that the Library of Congress continues to regard microform as a mainstay of its preservation programs with optical discs as a supplementary technology.[8] The publication of dual media, print and microform, such as those published by Congressional Information Service, is another example of continued interest in microform.

The introduction of online database in the 1970s has shaped the library operation in many ways. Access to materials is no longer physically limited to a library where materials are housed. It contains a large quantity of data yet provides fast retrieval capability. A computer search of a million records only takes a few seconds. The most useful feature of a database is its capability of providing multi-access points and a multi-dimensional approach. A searcher may locate items through author, title, source, language, date of publication, document type, and or any other access point imaginable. Users can also ask the computer to match the terms and retrieve only those documents in which a match occurs.[9] In this respect, it is far superior to microform.

In the 1980s, the optical disc has caught the attention of libraries. An optical disc is a high density platter for writing or reading through a laser emitted beam. Data are impressed forming microscopic pits on the disc surface. There are four kinds: CD-ROM (compact disc - read only memory), CD-WORM (compact disc - write once read many times), CD-I (compact disc - interactive), and CD-Erasable (compact disc - erasable). CD-I holds digital text, images, sound animation, and graphs, a multi-media disc such as the Compton Electronic Encyclopedia just mentioned. By function, there are character encoded discs, video discs, and music discs. One side of a 5-inch disc can hold up to 72 minutes of digitability encoded music.[10]

A single CD-ROM can store 540 megabytes of data or hold 16,000 pages of data equivalent to approximately 1,500 floppy discs. In this capacity, the entire Encyclopaedia Britannica can be stored on one disc.[11] CD-ROM technology has gained rapidly in popularity. A study, CD-ROM Market Opportunities, by Link Resources, predicts that "between now and the end of the decade, CD-ROM players and information products will generate 2.3 billion in revenue for hardware, media, software, service, and information providers."[12]

Both online databases and CD-ROM expedite locating and disseminating information. In using these new technologies, the speed, storage capacity, and volatility in retrieving information are fascinating. Users are, however, also frustrated at the problems in locating these sources and the method of retrieving information from them. They are specifically concerned about the shortage of bibliographical control of multisources, lack of standardization of data structures, and the diversity of software programs for information retrieval. We will take a closer look at these problems.

An ideal bibliographical control is to list complete records of human communication, to indicate location where records can be found, and to provide access to their contents. For online databases and CD-ROMs, there is no shortage of bibliographies of listing them separately. A few bibliographies of multisources have been published. Government Reports Announcement & Index, v. 75- , 1975- , lists titles in various forms: hardcopy, microform, and computer tape. The U. S. Bureau of the Census Catalog and Guide provides its products in the form of printed reports, microfiche, computer tapes, online access, diskettes, and maps. But the information is confined to its own publications.

Commercial publications have a more extensive coverage. Ulrich's International Periodical Directory, 1932- , has a section on serials available online. EBSCO's The Serials Directory: An International Reference Book, 1986- , provides information on additional physical forms, that is media other than a serial's original or conventional form. There are, however, many omissions. The bibliography of law books is perhaps the first such extensive bibliography of multisources. Law Books and Serials in Print: A Multimedia Sourcebook (1985, New York: Bowker, 6 volumes with quarterly cumulations), part of Bowker's Legal Reference System, lists, in addition to books, audio cassettes, video cassettes, software, online databases, and microform. For more convenient use, there is a need for a bibliograhy that provides information on where to find materials, the available media in which the materials are contained, and the location of such media. It would be ideal for the National Union Catalog and the New Serials Titles to take the helm in providing multisources, listing not only print products but also other media available on a particular title.

In a library, the library catalog is a bibliographical control device that provides a record of materials that a library owns. Anglo-American Cataloguing Rules is designed as a guide to cataloging fourteen different kinds of materials, i.e, books, pamphlets, printed sheets, cartographic materials, manuscripts, music, sound recordings, motion pictures, videorecordings, graphic materials, computer files, three-dimensional artefacts and realia, microforms, and serials.[13] The computer file refers to "a file (data and/or program) encoded for manipulation by computer."[14] By this definition, CD-ROM and online databases are included. It is commendable that the Rules generally keeps path with new developments, yet, there is still room for refinement.

One obvious advantage of print products over computer files is that the former can be browsed. A reader opens a book, glances it over, and acquires immediately some information about its contents. A computer file is not visible to the naked eye and has a different degree of retrieval capability. It calls for more depth of description to present adequately its subject, content, coverage, update frequency, and device for retrieval.

Indication of its relationship to other media would be extremely useful.

It appears that the traditional concept of cataloging only for in-house materials and for object in hand remains the basic consideration of the Anglo-American Cataloging Rules. The procedure is not clearly outlined for cataloging online databases which are not physically in the library. The AACR is silent on the following aspects: (1) databases with different titles used by vendors; (2) databases with different sizes marked by vendors; (3) varied parallels, either broader or narrower, or lack of some features in the counterpart of a database or vice versa; and (4) databases with different abbreviations or file numbers for their titles.[15] Other problems include the amount of detail needed to describe the database and the number of added entries to be used. With reference to levels of detail in the description, Article 9.0D of the AACR refers to Article 1.0D under general rules for description, that is primarily for print products and is not adequate for online databases.

The effective bibliograhical control of databases suggests the following:[16]

1. Title with medium designator in the bracket, parallel title, and other titles;

2. The parallel with other media, noting differences and range of coverage;

3. Search title or abbreviation or file number for access;

4. Period of coverage, updated and cumulated periodically;

5. Added entries for vendors that market the database;

6. Added entries for a series of databases;

In database structure, all files contain records and all records are divided by fields or paragraphs, and most fields are directly searchable. But arrangement of records and fields of a record vary with vendors. Take the American Statistics Index for example. When it was marketed at one time through ORBIT (On-line Retrieval of Bibliographic Information Timeshared), the Index sub-records were arranged under main records, thus each record contained many sub-records. The use of the logical operator AND in this file because of its record size (main records include many sub-records) will result in a large recall and is therefore not advisable. LINK and LINK NOT must be used in lieu of AND and AND NOT for more selective retrieval. In contrast, Dialog's arrangement of all sub-records as a single record results in smaller size of records. The use of AND and NOT will not retrieve as large a recall as ORBIT.

The ERIC file is available in BRS, Dialog, and ORBIT. ERIC provides some twenty-five searchable fields and several sub-fields. The file is reloaded by vendors into their own systems. Each vendor retains most of ERIC searchable fields, but deletes some sub-fields, and adds its own field, such as Dialog accession number. BRS does not use single word, major subject, and minor subject in the identifier field. It does not separate accession numbers for update, whereas ORBIT omits minor subject in both descripter and identifier fields. It must be noted that the deletion of some sub-fields has little impact on information retrieval. Such a variation is usually ignored by users. However, the most frustrating for user may be the diversity in labelling the fields by the various systems. Each field is generally labelled by two characters. There is no uniformity of labelling. In the searchable fields of ERIC, only five similar labels are used by BRS, Dialog, and ORBIT, and another five similar labels are used by two of the three systems; the remaining fields are labelled uniquely by each system.

Not all databases have the same fields and not all similar fields use same labels. In reviewing the fields of databases in three systems, the following data are found:[17]

	Number of Fields		
	BRS	Dialog	ORBIT
Basic Index		67	44
Additional Index		400	156
Total	208	467	200

It may be noted that searching is generally classified into basic index searching, or subject searching, and additional index searching, or non-subject searching (called subject-implicit searching in ORBIT). BRS does not make such a distinction. Not only do the number of fields and their availability in each file confuse the user, what is more confusing is that the same label can designate different fields, or the same field can be designated by different labels. For instance, in Dialog, the field CC= and CN= designate more than ten different fields each.

Records in CD-ROM are similarly arranged, consisting of many fields, most of which are searchable. Bowker's Books in Print Plus has two search modes: search and browse. There are nineteen fields in the search mode. The browse mode consists of nine fields. The Wilsondisc also provides two modes of searching. The browse mode consists of subject and personal name search. In the search mode, it provides six searchable fields: subject words, author, title, journal name, organization, and Dewey number. The search variations are far less than those available in Books in Print Plus. One unique feature of Wilsondisc is that it consists of more than one file of the Wilson family.

ERIC CD-ROM is currently marketed through three vendors. Although the data structure is designed by ERIC, variations in retrieval exist. The SilverPlatter's ERIC CD-ROM provides some twenty-nine searchable fields and sub-fields, whereas Dialog ERIC Ondisc's fields for menu search is quite limited. The ease of use, however, does not lie in the number of fields, but in the search mechanism.

Practically all searching in CD-ROMs for information retrieval is structured in menus. The user must search information step by step according to the displayed menu instructions. It is time-consuming, yet easy to grasp with little or no training. But the degree of ease varies. In Books in Print Plus, nineteen search fields are displayed in the search mode, each is represented by two characters followed by an equal sign "=". The user selects a field and inputs information for the system to search. The user may select another field and combine the search results. Although seaching process is simply and straight-forward, there are caveats to keep in mind. First, a title search must be given exact words. If the title contains the word, AND, OR, or ANDNOT, the entire title must in quotations so that the system will ignore these words as logical operators. Second, there are inconsistencies in input of the word, such as "the" and "and." The "&" sign or the word "and" are used inconsistently. The search will fail if the user keys in the title with the word "and" in it, when the system uses "&" instead of "and," or vice versa. Another inconsistency arises with the word "the" which is included in some cases, but omitted in others. The search for the title "The Garden Jungle", for example, should be entered as "Garden Jungle" or it will result in zero posting. For title search, if exact words are not known for certain, using the browse mode is advised.

SilverPlatter is the most convenient to use. Although basically a menu search, it imparts features of free-text search. The user may enter any terms and phrases and disregard the stop words. The user may, for instance, enter "pursuit of happiness," "gone with the wind," or "government of the people." The system will retrieve documents in which these words are present in the same field. Hyphenated phrases are searched as descriptors. Other features include display of index terms and downloading.

Dialog's Ondisc provides both menu and command searches. Its command search is the same as most Dialog online database commands. Its menu search is designed for a step by step search. The user may limit the search result by adding another term or using other options. It is also capable of downloading. Though it lacks the menu volatility of SilverPlatter, its Dialog command search is superb and sets off the limited menu field search well.

The concept of searching is basically the same for all these systems. These systems all enable users to search any word in the text, match the searched word, search the words in a string or near one another, limit the search to type, year, date, or language of publication, combine terms with author or other fields, and repeat the same search strategy in different files. But in operation details, each system differs from the other in access, protocols, commands, and output format. Operation diversities may be grouped as follows: (1) different proceduree for access; (2) different commands with the same result; (3) different features with compatible results; and (4) features not common to all systems. The chart below lists some features not common to all systems:

Features (Y/N)		Systems	
	BRS	Dialog	ORBIT
Security Code in addition to password	Y	N	Y
Online thesaurus	N	Y	N
SELECT STEPS	N	Y	N
SHOWSELECT (display of all terms in the SELECT list	N	N	Y
Negative Qualifier	Y	N	N
LINK/LINK NOT	N	Y	N
SELECT after each term EXPANDed/ROOTed required	Y	Y	N
Online sorting	Y	Y	N
Searched terms highlighted	Y	N	N
Print field in any sequence	N	N	Y
Images	N	Y	N

A benefit from diversity is the competititon for excellence.

But in many aspects, it serves no meaningful purpose. Simone Klugman has questioned the validity of having different commands for logoff, varied symbols for truncation, and inconsistent formatting of citation.[18] In additon, one may wonder why longon, stacking command, and field labels cannot be standardarized. The lack of uniformity and standardization not only among the systems but also within the system itself is an area most users consider an inconvenience. The user must memorize different protocols, commands, field labels, and other different features in switching from one system to another.

Over the years, the three systems have made noticeable progress toward compatibility, though not uniformity, in logon, search, result, and logoff procedures. Below are some of the achievements made by the three systems:

1. The Stacking command (/) in BRS can be changed so as to conform with the other two systems.
2. The ..SET DETAIL=ON command in BRS and the AUDIT=ON command in ORBIT achieve similar results as Dialog's Super Select.
3. The BREAK function in BRS is no longer limited to stopping print.
4. The introduction of proximity searching is a great feature by ORBIT to achieve compatiblility with other systems.
5. BRS has made available its online sorting capability.
6. Tailored print command is now available in Dialog.
7. ORBIT uses LOGOFF as an alternative to its STOP.
8. In displaying dictionary terms, EXPAND can be used as an alternative to NEIGHBOR in ORBIT.

In online retrieval, one significant development in easing diversity is the gateway facility by which one system serves as a revolving door to other system. The gateway enables one system to be linked to other system and/or other databases,[19] such as the Westlaw to Dialog, ALANET to EasyNet, and OCLC to BRS, just to name a few. An obvious advantage of such a gateway is that the user needs one logon procedure saving the steps of providing communication protocols, identification number, and passwords to different systems.

The emergence of gateway and front end software for microcomputer use is another milestone towards minimizing the problems stemming from of diversity. The gateway is defined as the type of software that takes the user "to the entrance of the databank (the gate) but no farther."[20] Of the many software, Perfect Link, Cross Talk, and Smartcom are three well-known packages.[21] Smartcom, for instance, is able to perform an automated logon function.

Front end software is more sophiscated. Over a dozen front end software are available on the market, including DialogLink, Pro-Search, Sci-Mate, and Wilsearch. The front end software features, in addition to gateway functions, access to several systems, pro-search editing and uploading, database selection, and post-processing of search results.[22] Since all front end packages use menu driven searches, one drawback is time-consumption, and its repeated step-by-step quaries most tedious.

Diversity and lack of standardization in CD-ROM remain a big problem to tackle. It would be an ideal to develop a program that makes the use of different CD-ROMs compatible. In online searching, efforts have been made towards standardization. In

1980, Subcommittee Z 39G (Standard Terms, Abbreviations, and symbols for Use in Interactive Information Retrieval) of the American National Standard Committee X-39 was formed for the purpose of reducing existing diversity in the command languages presently in use. At the same time ISO (International Organization for Standardization) Technical Committee 46/Sub-Committee 4/Working Group 5 was formed for the same purpose. Standardization takes many years to achieve and requires close cooperation, extensive discussion, continued debate, and eventual compromise. Complete standardization may never be accomplished. What we need now is an interface that enables us to use one system to retrieve information on the other.

It is reported that Lawrence Livermore National Laboratory (LLNL) has developed an intelligent gateway that allows a user to access diverse database resources. The software handles all communication, logon, and access procedures.[22] In 1986, an agreement was reached by participants of the Linked System Project (LSP). In this project, the four participants, the Library of Congress (LC), the Research Libraries Group (RLG), the Western Library Network (WLN), and On-Line Computer Library Center (OCLC) will set standards that permit each of them link to other for searching.[23] The latest service offered by H. W. Wilson is for its database Licensing Service to provide machine readable magnetic tapes of databases for local online access. The service is adapatable to NOTIS (Northwestern Online Total Integrated System) commands and protocols. Both ORBIT and BRS were purchased by the same company. It has been reported that an interface will be developed in about six months to enable the use of BRS commands to search in ORBIT or vice versa.

Evidentally, the problem of diversity is already becomming less of a problem. It would not be at all surprising to see a spurt of developments by 1995 for convenient, effective retrieving information in multimedia sources. Bibliographies of multimedia sources of information will emerge in different forms. The user will be able to locate multimedia sources from one source. There will be increased use of subject-based rather than medium-based meaterials regardless of their forms.[24] A user may use a single medium that contains information in whatever form, such as text, films, slides, photographs, and drawings. There will be intelligent programs by which a user may automatically logon, select database and systems, retrieve information, display the result, and logoff. An interface in making diverse systems compatible with each other to access information will become a reality. The interface will be an integrated system that has the capabilities also for word-processing, spell-checking, spreadsheet and graphic presentations, and database management. The user may single out the information retrieved with automatic citation; edit, re-format and re-process it; input the piece of information into his own datafile for future use; and present, on the basis of retrieved information, statistical data or graphic illustrations. It would not be beyond belief to see the full development of artificial intelligence application of which can select systems, begin particular databases, retrieve relevant information, analyse the information retrieved and reach a decision, and even generate new concept and idea.

REFERENCES

1. Colin Steele, "From Punched Cards to Robots: Our Ascent into Technology," Wilson Library Bulletin, 62(2): 39-32, 31 (1987).

2. Keynote speech at 1987 EDUCOM, OCLA videotape #17562069.

3. Chronolog 16 (1): 1 (1988).

4. Walt Crawford, Current Technologies in the Library: An Informal Overview. Boston: G. K. Hall, 1988, pp. 26-27.

5. Charles G. La Hood, Jr. "Microfilm for the Librayr of Congress," College and Research Libraries, 34 (1973): 291-94.

6. Charles Chadwyck-Healey, "The Future of Microform in an Electronic Age," Wilson Library Bulletin 58 (4): 270-3 (1983).

7. Alan Calmes, "New Confidence in Microfilm," Library Journal, 111(15): 38-42 (1986).

8. Ibid., 40.

9. Tze-chung Li, An Introduction to Online Searching (Westport, CT: Greenwood Press, 1985) , pp. 8-9.

10. William R. Nugent,"Optical Discs - An Emerging Technology for Libraries," IFLA Journal, 12 (3): 175-81 (1986).

11. Access, volume 1, number 2, June/July 1986.

12. Information Today, 3 (6): 22 (1986).

13. 2d ed., rev. (Chicago: American Library Association, 1988, 677p.)

14. Ibid., p. 617.

15. Li, op. cit., p. 71.

16. Ibid., pp. 71-2.

17. Ibid., pp. 264-7.

18. Simone Klugman, "Online Informatin Retrieval Interface with Traditinoal Reference Services," Online Review, 4: 271 (1980).

19. Ruth N. Cuadra and Carlos A. Cuadra, "In Search of Gateways," Information Today 4(3): 7 (1987).

20. Donald T. Hawkins abd Louise Levy, Front End Software

for Online Database Searching, Part I: Definitions, Systems Features, and Evaluation," *Online* 9(6): 31 (1985). In her earlier writing, Levy defined gateway broadly to include what we now call front end. See Louise Levy, "Gateway Software: Is It for You?" *Online* 8 (6): 67-79 (1984).

21. For a comparison of Perfect Link and Crosstalk, see Maurita Peterson Holland, "Communications Software: Experience with Perfect Link and Crosstalk XVI," *Online* 8(4): 75-80 (1984).

22. Hilary D. Burton, "Technology to Provide Excellence in Information Services," *Special Libraries* 78(1): 1-6 (1987).

23. Richard W. McCoy, "The Linked Systems Project: Progress, Promise, Realities," *Library Journal* 111: 33-39 (1986).

24. Coined after the terms used by Pat Molholt. see Molholt, "A View from the Chip: The Influence of Information Techndologies on Libraries and Librarianship," *INFLA Journal* 13 (10): 16 (1987).

A QUESTION OF FORMATS

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Abstract

When setting up a bibliographic information and retrieval system, the systems analyst is confronted with a multiplicity of different aids to designing the database in the form of bibliographic exchange formats.

This paper takes the three most important international exchange formats, the Unesco Common Communication Format, IFLA's UNIMARC and the UNISIST Reference manual and describes them in terms of their aims, technical aspects and their user base.

The conclusion is that everyone has to decide with whom they are likely to want to co-operate in order to make their decision as to which format on which to base their system.

A QUESTION OF FORMATS

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INTRODUCTION

Anyone who is even a little acquainted with bibliographic standards for the exchange of data will know that there are a number of standard formats for the exchange of data. Probably the most used are national MARC formats, USMARC, UK MARC, AUSMARC, MALMARC, etc. In order to exchange data between these, an international MARC format known as UNIMARC has been developed. Other organizations, particularly the secondary services, use the UNISIST Reference Manual. And more recently, we have been hearing about the Unesco CCF. This paper introduces and describes all three.

UNIMARC: THE STANDARD INTERNATIONAL MARC NETWORK EXCHANGE FORMAT

UNIMARC was the brain-child of IFLA. It was conceived of as a tool for an International MARC Network. Although the record structure which later became ISO 2709 was accepted early on, during the first co-operative project between the Library of Congress and BNB, there had been disagreement on the fields, or content designators as they are called between LC and BNB and later between other national libraries. In 1971, a recommendation was made to IFLA that they be responsible for establishing an international standard for content designators. In August 1972, at the IFLA General Conference in Budapest, the IFLA Committee on Cataloguing and the IFLA Committee on Mechanization jointly sponsored the IFLA Working Group on Content Designators. This Working Group had the task of exploring the reasons for the differences between the different MARC formats and arriving at a standard for the international exchange of data in machine-readable form. It limited its investigations to the requirements of the library community, i.e. libraries and national bibliographies. However, to ensure coordination of efforts as widely as possible, all working papers were submitted to the ISO TC46/SC4 Working Group on Content Designators as well as to the UNISIST Working Group on Bibliographic Data Exchange which were both involved with formats for the secondary services. During deliberations, it was realised that each country needed to retain or establish its own format because of differences between national requirements, relating partly to the fact that national bibliographic agencies differed from each other in their roles and partly because of the language barriers that exist between nations. Each national agency would also arrange for the development of conversion programs to convert the data in its own national format into that of the international format. One feature that was agreed on was that the International Standard Bibliographic Descriptions should be the basis of the data elements relating to the descriptive area of the catalogue record. This was a wise move; not only were the ISBDs becoming the basis of national cataloguing codes; their adoption in UNIMARC gave the new format an international flavour and a reference point which librarians not yet familiar with automation could understand. Another feature that was agreed upon was that it should eventually be hospitable to all materials. This was a departure from the Library of Congress practice of having a format for each different type of material and one that gave UNIMARC an advantage over other national formats when countries newly developing a national format sought models on which to base it. UNIMARC was published in 1977 at a crucial point in the history of the International MARC Network, between the completion of the International MARC Network Study document and its approval for publication.

The second edition of UNIMARC was published in 1980. This new edition was spurred on by the completion of ISBDs for cartographic materials, and non-book materials and by the revision of the ISBDs for Monographs and Serials.

UNIMARC manual

After the second edition of UNIMARC was published, work began on a UNIMARC interpretive handbook which was later published as the UNIMARC handbook. This uncovered a number of problems in UNIMARC and so a revision was made of UNIMARC and of the guidelines and these were published in the UNIMARC manual.

Also, during the 1980s, a review had taken place on the ISBDs for Cartographic Material, Monographic Material, Non-Book Materials and Serials. Described as a "harmonization process", the review was designed to ensure consistency, to provide further and more varied examples, to consider the particular problems of non-Roman scripts and to modify ISBD(NBM) to make it hospitable to many kinds of material without it assuming the function of a cataloguing code. It was completed in 1986 and though the four ISBDs were not published until 1987 and 1988, they were in a definite enough state to be considered in the revised the UNIMARC manual which was published in 1987, so becoming the 3rd edition of UNIMARC. Thus, UNIMARC ceased to be contained in a basic standard-like document, but was embedded in its interpretive document. It was expected that this edition would herald a period of relative stability for UNIMARC. Nevertheless, some revision will be required in the future. A group is examining the ISBDs for Antiquarian Materials, Printed Music and Computer Files to ensure harmonization. ISBD(G) will be scrutinized to see if any adjustments are needed as a result of the review programme.

CD-ROM

A word on the international MARC community's efforts on standardizing for CD-ROM will be useful here. The Conference of Directors of National Libraries set up in 1986 discussions under the umbrella of the International MARC Network Committee (IMNC) with a view to achieving a common applications-software standard for the publication of databases of national bibliographies on CD-ROM. The ultimate aim of the standard was to allow the easy interchange of CD-ROM products from different agencies. The discs would be accessed searched and downloaded using the local search language and would be able to switch between discs without changing language. At a meeting in London in December 1987 at which representatives were present from the national libraries of France, Federal Republic of Germany, Portugal, Spain, Norway, the Netherlands and the United Kingdom, and at which input was received from the US Library of Congress and the National Library of Canada the British Library it was decided that the British Library and the Bibliotheque Nationale of France should go ahead with a joint CD ROM production [1]. This consisted of about 30,000 records in UK MARC from the BNBMARC database and the same number of records in UNIMARC from the French database. These were both searchable using the same search language in either English or French. This has since been evaluated within the national libraries of the European Economic Community with help from the Commission [2]. The records may be viewed in UK MARC or in UNIMARC, depending on the source, in a diagnostic-type format where tags and indicators precede the data.

UNIMARC - technical details

UNIMARC was designed on the basis of a set of nine principles which were published in the different editions as 'Guidelines for Format Design'. These were based on experience which had been gained in the different national MARC formats and are too detailed to include here.

Characteristic features relating to UNIMARC as an exchange format

An interesting features of the format is the inclusion of fields in blocks defined by type of data element. Up to the development of UNIMARC, the major national MARC formats had ordered the different fields in a way that reflected the order of the field on a traditional catalogue card. UNIMARC avoided this bias towards one particular end product of a machine-readable bibliographic record and put all name access points in one block instead of supplying different fields for author as main entry from author as added entry.

All title access points are defined in the 500 block other than title proper which is field 200 which begins the descriptive block as the title is usually required in the same form as an access point as in the descriptive area.

The 100 block is for coded data. Field 100 includes codes common to all materials and each type of material has another field for codes specific to that type. The blocks and the fields they contain are in the UNIMARC manual.

Linking techniques

The most novel feature of UNIMARC is its treatment of links between one bibliographic item and another.

Bibliographic items have relationships with each other. They may have previous editions, they may, as in the case of serials, have related, earlier or later titles. Moreover, they may be in the same journal or series as each other. In special cases, some bibliographic items are translations of others.

Another kind of relation is the sharing of common subject or authorship.

UNIMARC has a number of different ways of showing these linking relationships.

Relationships between bibliographic items are indicated by means of fields in the linking entry block, fields 410 to 488. The largest number of these relate to serials, such as "Continues", "Continues in part", "Changed back to", "Merged with x and y to form". The names of these linking fields are in fact the text that would be associated with the name of the serial in a note generated for the link in a traditional catalogue record.

Also for serials are "Supplement", "Parent of supplement" and "Issued with".

For monographs and serials there are the fields "Series" and "Subseries". These can be used in monographs and serials to link to a containing series and subseries. Links can be made to other editions and to translations or from a translation to its original. These may apply to both monographs and series.

There is additionally a set of linking fields entitled "Levels" which enable links to be made between items in a bibliographic hierarchy.

These link to Set, Subset, Piece and Piece-analytic. Since processing of records containing hierarchical links is more complex, character position 8 in the record label is reserved to indicate if this technique has been used. Organizations which had not developed conversion programs for records including these links can thus be warned that they will not be able to process them correctly. Also, it shows that other records will be required for the complete processing of the record that contains these fields. This code has been adopted from character position 19 of the US MARC leader.

In all these cases, the linking fields can be used in two different ways. A link can be made to another record, or the data relating to the related record can be embedded in the linking field. Since one of the main aims of MARC records is to produce catalogue records in printed form, an indicator, the second indicator, specifies whether the field is to be used to print a note: the first indicator is always blank.

Following the indicators, the subfield identifier is $1. There then follows, if a link is being made to a record control number, the record control number preceded for identification by 001, the tag for the record control number or identifier.

If the embedded record technique is used, each field in the embedded record follows the tag which indicates the relation and each field is preceded by $1. These embedded fields are not found in any directory, so processing of these fields in the embedded record is quite different from processing of fields in the main body of the record.

In the record for the serial 'Bus and coach' which was preceded by 'Motor transport' would appear in field 434 the following:

```
_1$15300_$aBus & coach   ['_' represents space]
```

The first two characters are indicators of field 434.
$1 indicates start of the first embedded field 530
0_ are indicators in the embedded field
$aBus & coach are the data which follow immediately.

434 occurs in the directory with pointers to the data string shown above.

If a link were being made to a record number and the record number of 'Bus & coach" was T01564, then the field would appear as follows:

```
_1$1001T01564
```

UNIMARC was the first in the family of MARC formats to include this kind of linking mechanism. Hitherto, formats had indicated relationships in other ways, and these methods are retained in UNIMARC itself.

In a traditional catalogue, series relationships are indicated by means of added entries. An item in a monographic series will have an added entry under the name of the series and, if applicable, the number within that series. The series statement which is part of the description of the monograph according to traditional cataloguing practice may be used as an access point if it is the established form. Otherwise, field 410 must be used to contain an embedded record relating to the series. The embedded record may consist of the title of the series; or it may include both author and title if cataloguing rules would require an author/title access point.

If the field contained a record control number, then the program could proceed as follows when it produced the record in the catalogue from this record. If the record to which the link were made (that of the series) had a main entry under author, an author title added entry would be produced for this item in the series. If the record of the series on the other hand was entered under title, then a title added entry for the series would be produced in the record of the monograph.

UNIMARC Authorities

From the outset, there had been problems of how to cope with references in many MARC formats. LC MARC did not include them. UK MARC included in each record every reference required for all the headings in that record. The rationale behind that was that if you had taken only that one record with a particular heading, you would need to find all its references in that record to add them to the database. The logical way forward was for a format which would facilitate the setting up of databases of authority records. UNIMARC itself had incorporated in the access point fields a subfield, $3, which would allow the entry of a code which hopefully in the future would be an international authority number but for the present would be a number allocated to a heading in a particular system. It was not clear in the original manual or in he UNIMARC handbook how this would be done. Would there be records including the text of the headings and the code, or would the headings be replaced by codes? The logical way to deal with access points in modern database management systems is to create separate records for each heading and link them to all the records in which they need to appear, calling them in to those records by means of the database number or some other identifier. However, this is not true of exchanging bibliographic records since it is hard to ensure that all authority records are included in files along with bibliographic records. It is probably better to exchange records in complete form. If the records have originated from a source where an authority file has been used consistently, then the receiving system should be able to match them up, and perhaps replace them by authority records created from the names held as bibliographic data. However, many organizations also wish to have access to authority files for their own record creation and the best way for them to obtain these from national agencies is in machine-readable form so that they may be used directly in their record creation and reduce the vast effort put into creating headings and their references.

To facilitate the exchange of authority information, the IFLA Sections on Information Technology and Cataloguing jointly set up the IFLA Working Group on an International Authority System, in 1979. This submitted in 1983 the Guidelines for authority and reference entries [3] (GARE) which set out the data elements that should appear in authority and reference entries in eye-readable form, using conventions akin to the punctuation in ISBD.

Then followed the development of a companion format, based on the underlying principles of UNIMARC and under the auspices of a Steering group on a UNIMARC Format for Authorities [4].

Critique of UNIMARC

Although UNIMARC has been adopted as a national format in many countries, it is intended as an international exchange format into which national agencies will convert their national records to cut down on the bilateral conversion arrangements in which national agencies would otherwise have to engage.

As an international exchange format, it had to be able to cater for all the idiosyncracies of existing national formats.

For this reason, the UNIMARC format contains some redundancy; one reason why the UNIMARC handbook was commissioned was to give users of UNIMARC guidance as to which option to take in those circumstances where data could be transferred from one field in a national format to two in UNIMARC. One can see a certain amount of overlap between Uniform Titles, Collective Uniform Titles, Uniform Conventional Headings and Topical Name Used as a Subject.

Because records created under different cataloguing rules may be held in the UNIMARC format, it is difficult to cater for every eventuality. Some cataloguing codes, increasingly as adaptations are made for automation, may not have the concept of main entry. So a way has to be included to code these records as UNIMARC does cater for main entry. Unfortunately, records using main entry and those that do not will never be completely compatible. But compatibility is a relative concept and it is well-known that if we want to share records we always have to make some compromises.

In future, it is expected that many countries will adopt UNIMARC or a national format which is convertible to UNIMARC. IFLA is now promoting UNIMARC particularly to developing countries by means of workshops, the first of which was held at the IFLA General Conference in Sydney in 1988, the proceedings of which have been published [5].

UNISIST REFERENCE MANUAL

History and use

UNIMARC and the MARC formats have been developed for the library sector of the information community.

Computers were already being employed by secondary services before being introduced into libraries; but, in the context of the exchange of data the secondary services were to follow the libraries. Since the record structure of the MARC format had been made a national standard in the USA, ANSI Z39.2-1971, [6] it was the obvious standard for the information community as a whole to follow. In the United States, the Chemical Abstracts Service followed the Library of Congress in setting up a similar cooperative project to that which the Library of Congress had set up with the British National Bibliography, this time with UKCIS, the UK Chemical Information Service. They, too, took Z39.2-1971 as the standard record structure. In the UK, the Institute of Electrical Engineers started in 1969 a tape service for bibliographic references, automating their abstracting and indexing service which began as Science Abstracts in 1898. This, too, used the same record structure. The need for a standard set of data elements for the exchange of bibliographic data was spreading to the secondary services, so they began to look for something akin to the MARC formats. They based their format on the same record structure, though they adopted their own system of tags for the data elements.

Resolutions adopted at the 14th and 15th Sessions of the General Conference of Unesco which took place in 1966 and 1968 authorized the Director-General of Unesco to undertake and complete jointly with the International Council of Scientific Unions (ICSU) a feasibility study on the establishment of a World Science Information System (UNISIST).

The UNISIST-ICSU/AB Working Group on Bibliographic Descriptions, set up in 1967 as part of the UNISIST programme decided that it was necessary to develop a standard for the recording and exchange of data in machine-readable form. The outcome of this was the UNISIST Reference Manual for Machine-Readable Bibliographic Descriptions [7] and the group that had worked on it included representatives from the the British National Bibliography, the Centre National de Recherche Scientifique, France, the Institution of Electronic Engineers who had set up INSPEC, and Chemical Abstracts.

When the format was being developed, the Working Group had only the early MARC formats as models. The members decided that they should take great care not to cause confusion with the existing MARC formats and decided that tags should begin with an alphabetic character, and subfield identifiers should be numeric. Because the International Serials Data System was engaged in the control of serial titles, it was decided that the Reference Manual should not include the treatment of serials as a whole, so no provision was made for them. However, fields were included for the treatment of contributions in serials. The Manual included matrices or tables giving the fields required for each combination of bibliographic level (e.g. analytic in monograph in series; monograph; monograph in series) and it was made clear that this format should not be used for serials by excluding the category of 'serial only' from the table, and to exclude holdings data.

After publication, it was felt that the manual needed a maintenance agency to look after it and so the UK government agreed to host a UNISIST Centre which was set up to maintain it and called UNIBID. The Centre was responsible for publishing the second edition of the Reference Manual which was published in loose-leaf form in 1982. After hosting the Centre for five years, the British Library transferred the functions of UNIBID to the Unesco Division of the General Information Programme which continued to provide copies of the manual to enquirers. However, the second edition, despite being published in loose-leaf format was not updated as such because of shortage of staff and the labour intensive nature of the distribution of loose-leaf publications, and this edition was superseded by a third edition incorporating all the changes in 1985 which, though in the same. format, was not marketed as being loose-leaf.

The manual was widely circulated by Unesco and it is likely that it had great influence on systems that were being developed. It was used as a source of data elements by organizations developing formats. It was used by the International Development Research Centre in Ottawa as a format on which to model the format for DEVSIS, the Development Information System, and was then adopted for the MINISIS software system. This package, developed by IDRC as a package to be made available to organizations in developing countries for their library databases is prominent among software packages in having four-digit alphanumeric tags (one alphabetic character followed by three numeric, the last of which is a subfield identifier).

A further user of the Manual is the American Geological Society's abstracting service GeoRef. This organization was one of the first agencies to adopt the Reference Manual as the basic format of its automated bibliographic information system. They specialize in indexing all English Language material in their subject field. Mulvihill tells [8] how when they decided to extend the coverage to French material by means of a co-operative agreement with CNRS in France, they had no difficulty in merging files with each other; since CNRS had been heavily involved in the design of the Reference Manual, its format was compatible with that of GeoRef.

Technical features of the format

The major feature of the format is that it gives equal prominence to bibliographic records whether they relate to analytics (meaning journal articles and contributions in journals as well as works found published separately elsewhere but here bound together), monographs or serial titles. The format was designed to do this because it was developed by secondary services which give equal prominence to the different bibliographic levels. It does this in a so-called 'flat' record structure. The record contains no distinctive feature to permit a hierarchy to be indicated; instead, different tags are allocated to fields at a particular level. Thus, a computer program interpreting the record has to hold a table in which each field is separately identified. Additionally, certain fields such as ISBN and publisher are not identified as belonging to any particular bibliographic level; in most cases the level of these fields is implied, as publisher, for example, relates to the monograph. As mentioned above, the group developing the format avoided enabling the format to be used for serial titles, and in the matrix in the first edition giving combinations of fields for types of material there is no column for serial title. Tag A08 is the field identifier for title of analytic, A09 title of monograph and A10 title of collection level. A03 is the field for title of serial. In the second edition of the Reference Manual, the scope of fields A13 and A19, (Person and corporate body associated with collection) has been extended to include responsibility for serials.

The format has found favour with secondary services all over the world but has not made much inroad into libraries with the exception of certain countries such as Turkey and Macedonia in Yugoslavia. This is probably in part due to the fact that the manual includes simple cataloguing rules which may conflict with national cataloguing codes.

UNESCO COMMON COMMUNICATION FORMAT

Although Unesco had developed the Reference Manual with the help of ICSU/AB, it had not been accepted unquestionably by the audience it was intended to serve. Many organizations continued to approach Unesco for assistance in developing bibliographic information systems; sometimes these organizations were related to national libraries and needed to establish data bases that were compatible with MARC. Sometimes they were organizations that straddled the divide conventionally believed to exist between the libraries and secondary services. Some were even situated within national libraries but were secondary services, so it was difficult to see whether they should follow the Reference Manual developed for the secondary services or UNIMARC, developed by and for national libraries. In order to solicit wider opinion on the problem and thereby to help in its decision making, Unesco sponsored the International Symposium on Bibliographic Exchange Formats. This took place in Taormina in April 1978 and was organized by UNIBID, the office supported by the Unesco General Information Programme (which by then had been set up to include the UNISIST programme) and the British Library which was then responsible for maintaining the Reference Manual. The Symposium also enjoyed the sponsorship of ICSU/AB, IFLA and ISO. Papers were given on a number of issues relating to the then state of the art of exchange formats and outlines were given of the main features of the major international formats. The proceedings were published in late 1978 [9]. As a result of resolutions passed at the Symposium, Unesco set up the Ad hoc Group for the Establishment of the Common Communication Format. This Group contained experts from ICSU/AB, ISDS (the International Serials Data System), IFLA, ISO and UNIBID, as well as an expert from the group that had devised MEKOF, the format of the CMEA (Eastern European) countries. The Group worked on the basis that the new format must be compatible with the MEKOF, UNIMARC and UNISIST Reference Manual formats. It also took into account derivatives of these formats, namely the USSR/US Exchange Format (based on UNIMARC) and an ICSU/AB Extension to the Reference Manual developed by the Four Ways Committee. The Group agreed that the record structure of the format should be that specified in the ISO 2709 standard, which was in any case used by all the formats being taken into account. A consultant prepared a data element directory which included the majority of the data elements from those formats.

In the early days of the Group, much of the discussion centred on the adoption of a basic set of mandatory data elements. It was clear that the secondary services were not prepared to adopt the mandatory elements of ISBD. For instance, the statement of responsibility was not provided by many of their databases. The libraries community was persuaded that, though the ISBD elements were, in principle, desirable, records without certain of them from sources without the tradition of fullness of the record that is found in the national libraries would nevertheless be useful to them. The format was aimed at operations which needed to provide records to and receive records from both library and secondary service community, and as many of these organizations were in developing countries, it was decided to keep the format simple in terms of its data elements and data element definition. Taking into account the fact that there was not then, and indeed still is not, any international agreement on cataloguing rules, the format was kept free of anything amounting to cataloguing rules. In order to achieve compatibility between the different record structures of the formats and their differently-defined bibliographic levels, a record structure was defined for the CCF implementing the latest version of ISO 2709. The structure of the format has at times been criticized as over-complex. It might be true that it is not easy for cataloguers to understand: that is because it requires a different approach from that of traditional cataloguing on which, incidentally, secondary services practices also are usually based. However, the CCF is, as a standard, only required to be implemented as an exchange format, so the total computerized system should take this into account, and allow records to be created in a way that more closely resembles data entry practices in other automated systems. This will require a data entry format which is different from the exchange format. It may be obvious to many users that this can be done to simplify data entry. However, there are other users who are still of the opinion that to follow the CCF it is necessary to use the data elements as described in the manual, and their identifiers, at every possible level in the system. This is possible for the MARC formats as they were developed to automate existing manual systems geared up to the production of catalogue cards. The CCF on the other hand was designed from a data element directory.

The format was published in 1984.

Users of the Format

Even before the format was formally published, two major organizations were already using it. The Dag Hammarskjold Library of the UN in New York adopted the CCF. A data entry manual has been published, the UNBIS Reference Manual [10].

The Office of Official Publications of the European Communities was developing new software and adopted the CCF because of its flexible record structure. They were interested not only in providing a mechanism for linking bibliographic records to each other but also in providing the facility for the linking of the actual text. They publish the Official Journal of the European Communities which consists of small items of information in a daily journal with weekly supplements. These have been put in a large database, each item including its text constituting one record. The main aim is to enable the journal to be printed from tapes in different centres throughout the European Community. The bibliographic levels and segments of the CCF have been used to the full to enable the data from the different sections in the publication to be arranged in their appropriate segments. FORMEX has been published and from the document it can be seen that it adheres very closely to the CCF.[11]

Probably the first network to adopt the CCF was the ICONDA Group developing an international construction database. They had originally planned to use the UNISIST Reference Manual, but, because they were intending to merge databases which had already adopted data entry rules, they found the CCF easier to implement and have based their manual on it [12].

Since publication of the CCF, a number of organizations have been helped by Unesco to investigate the advantage of using the format, and, where it has proved advantageous, to adopt it in one way or another. able to start afresh. Simmons [13] relates how COLCIENCIAS, a semi-autonomous government agency took on the task of creating and co-ordinating a co-operative national information system to include the resources of documentation centres, libraries and archives, many of which were microcomputer based. These organizations were separately funded and chose their own computer hardware and software. A 'switching format' based on the CCF has been designed called the Formato Comun de Comunicacion Bibliografica para Colombia (FCCC). Each participating agency required a pair of programs to be written, to convert its records to FCCC and back. Programs will also enable the conversion from FCCC to CCF and back.

The International Co-ordinating Committee for Development Associations (ICCDA) has developed an implementation of the CCF on the CDS/ISIS Microcomputer Software Package which is intended for producing databases which can be exchanged between participants. A manual accompanies the software package [14]. The work on the package was co-ordinated by the OECD Development Centre and supported by IDRC. This package is being used as a model for other similar implementations outside the development community wishing to use the CCF and the CDS/ISIS package.

In China, too, the CCF has been translated and is beginning to be promoted in organizations that need to participate in both the library and secondary service the library and the secondary services community.

The second edition of the format was published in May 1988, and in April 1989, the first Users Meeting took place at the International Bureau of Education in Geneva, sponsored by Unesco, at which progress reports, technical papers and practical demonstrations were given on topics such as implementing the CCF on particular software systems, future extensions to the format for additional kinds of material and conversions between the CCF and other formats [15].

Technical aspects

The record structure of the CCF has been criticized by some users as over-complex. In fact, as a machine-readable format it is the opposite, and it can be thought of as complex only when it is regarded as a data entry format which it was not intended to be. It is complicated for cataloguers to enter data into the format, especially if they try and create manually the links between records or between segments in a record.

There are two main features of the format that distinguish it from other formats. The first feature is its simple set of data elements that can be used at any bibliographic level and are disassociated from cataloguing codes. The second is the logically-defined record structure which uses the fourth element of the ISO 2709 directory to denote bibliographic level and field occurrence. The use of both of these features is a product of the circumstances in which the format was devised. Since the format was designed to be compatible with a number of other already existing international formats, it was necessary either to include all data elements from these other formats, or a subset. Including all data elements, in particular those that are seldom used, would have decreased the level of compatibility in the CCF. It is in the lesser used data elements that the formats have gone their own way. Therefore it was decided to include the basic elements in the format for exchange and let the less commonly used data elements be added as private data elements between parties to an exchange agreement. Another reason for there being fewer data elements than there would otherwise be is that data elements relating to different bibliographic levels are not allocated to different fields at each but appear only once at one designated field. Field 200 is the field for title. If the title is the title of a monograph, it will be designated to a segment containing all the fields relating to the monographic level. If the title is that of an article it will be designated to a segment containing all the fields relating to that article.

The record structure of the CCF was devised to take into account different structures in the format from which records would originate. The Reference Manual and formats related to it have fields designated for different bibliographical levels. UNIMARC has fields designed primarily for the monographic and serial level but can also use those fields embedded in linking fields as fields describing an analytic. The Reference Manual has four bibliographic levels, analytic, monograph, serial and collective, whilst UNIMARC has analytic, monograph, serial and collection. Collective in RM corresponds to multi-volume monograph in UNIMARC (only a subset of monograph). In both source formats, the fields relating to appropriate bibliographic levels can easily be identified. However, the relationships could more easily be converted into a third more logical structure than into the structure of the other of the original formats, so the structure of the CCF was designed to be logical. It was designed to make use of a then new feature of ISO 2709, the fourth element of the record directory, so that each field is denoted (in this fourth part of the directory) as belonging to its bibliographic level and each field in the record is uniquely identified there by an occurrence identifier.

Field to field links have also been included in the CCF. The second edition includes codes to denote links between an author name and his affiliation (which will usually be entered in its own field and may be formatted like a corporate body if the rules permit) and between publisher and ISBN where a record includes two publishers of a simultaneously published work.

In evaluating the CCF it is necessary to remember three points:

a) Relationship with existing formats

The CCF was not designed from first principles but was based on major existing international exchange formats and was intended to be used for the transfer of records between systems which were already capable of providing output into the these major exchange formats.

It was not expected to have to do anything that could not be done by any existing exchange format.

It is possible to take a bibliographic item such as a series of annual conference proceedings where each member of the series has its own individual articles and create one record containing all the data relating to what would amount in most bibliographic systems to a number of records. However to comply with the CCF, this record will contain a segment for each separately occurring instance of each bibliographic level. One of these segments has to be labelled the primary segment and this will contain certain elements of control information such as record control number. If the format had been designed from first principles it would have probably contained a control segment in each record which would always be present and would contain information as to which segments would make up a complete bibliographic record. As it is, it is the primary segment which contains this control information.

b) The CCF is an exchange format

The CCF is intended as an exchange format and as such has to contain bibliographic data for exchanging between systems. It does not govern what can be done within the systems themselves, so it cannot be looked to as a guide for creators of on-line public access catalogues or other systems. Of course, the definition of data elements will affect the internal architecture of systems using these data elements, but there is a large amount of agreement between organizations as to the definition of the key data elements in a record. This can be noted by comparing the data elements in a national bibliography and in a secondary service publication. The data elements author, title, publisher, date, to mention only a few, will be there in every case although they may be presented in different forms, according to different cataloguing codes.

c) The CCF is intended for exchange of bibliographic data

Thirdly, when the system was developed it was intended for the exchange of those data elements of the bibliographic record that were needed for the identification of a document in a catalogue or bibliography. It does not contain fields that would be required for library circulation systems or inter-library loan. An individual system using the CCF as an exchange format to facilitate record creation by taking records created externally in the CCF may add any other fields required for its own purposes. Moreover, systems wishing to exchange data elements other than those provided for in the CCF are free to allocate unused tags to those data elements or to allocate alpha-numeric tags (e.g. AAA, BAZ, H97).

CONCLUSION

This paper has presented the facts about the different international exchange formats. Each user has to decide which format he needs in his system on the basis of whether he is part of a library network, a secondary service, or whether he falls between the two and needs to exchange with both.

REFERENCES

1 Compact disc for national bibliography : Britain and France join forces in The British Library Bibliographic Services newsletter no.46

June 1988 p1-3.

2 McSean, Tony. Sharing the data: developments in MARC record supply in Mechanisms for library cooperation : getting our act together: proceedings of the 13th MARC User Group Seminar. Aldershot, Gower, 1988, p71

3 Guidelines for authority and reference entries / recommended by the Working Group on an International Authority System. London, IFLA International Programme for UBC, 1984

4 UNIMARC -- Authorities: universal MARC format for authorities. [s.l.]: IFLA Steering Group for an Authorities Format.

5 Proceedings of the UNIMARC workshop. London, IFLA UBCIM Programme, 1989

6 American National Standards Institute. American National Standard Format for bibliographic information interchange on magnetic tape. New York, ANSI, 1971 (ANSI Z39.2-1971) 2nd ed. 1979.

7 Martin, M.D. (ed) Reference manual for machine-readable bibliographic descriptions. Paris, Unesco, 1974 (SC.74/WS/20)

8 Mulvihill, J.G. GeoRef coverage and improvements in the bibliography and index of geology. In: Prewett, N.J. (ed.) Keeping current with geoscience information. Washington, DC, 1981. pp55-64

9 International Symposium on Bibliographic Exchange Formats. Towards a common bibliographic exchange format?: proceedings. Budapest, OMKDK, 1978

10 UNBIS: Reference manual for bibliographic description: a manual for the preparation of bibliographic data for input into and retrieval from the United Nations Bibliographic Information System. New York, UN Dag Hammarskjold Library, 1985

11 Guittet, C. (ed.) FORMEX: formalized exchange of electronic publications. Luxemburg, Office for Official Publications of the European Communities, 1985 ISBN 92-825-5399-X

12 ICONDA communication format: format for the exchange of records in the frame of the International Construction Database. Stuttgart, IRB Verlag, 1985

13 Simmons, P. Using CCF: the Common Communication Format, in Information technology and libraries 5(4) 1988 p285-294

14 Di Lauro, Anne. IDIN manual for the creation and management of a bibliographic database using Micro-ISIS. Paris, OECD, 1988. 189p includes diskette

15 Simmons, P.(ed.) Proceedings of the First CCF Users' Meeting. Paris, Unesco, to be published.

Format documents: latest editions

UNIMARC manual. London, IFLA UBCIM programme, 1987

Dierickx, H. and Hopkinson, A. Reference manual for machine-readable bibliographic descriptions. 3rd rev. ed. Paris, Unesco, 1985

CCF: the Common Communication Format. 2nd ed. Paris, Unesco, 1988

BABINAT: A META-FORMAT TO SUPPORT THE DEVELOPMENT OF NATIONAL BIBLIOGRAPHIC DATA BASES WITHIN CO-OPERATIVE NETWORKS

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ABSTRACT

Most of the less developed countries have already embarked, or are likely to do so, in the progressive establishment of decentralized national information systems based upon networks in which the participating units at various levels use micro-computers for the production and maintenance of bibliographic data bases.

Micro-computer technology appears to offer indeed an unique and effective answer to the shortcomings of their documentation infrastructures, in particular the shortage of skilled professional manpower. However, if applied without a reference standard for the definition of formats, it could instead lead to the worsening of present duplications and incompatibilities.

In order to facilitate the establishement and operation of such networks, a reference manual for national bibliographic data bases, called BABINAT, has been produced by a consortium of French organizations which currently support the development of information systems in the less developed countries.

It is able to cater for all documentary functions assigned to the information units from the lowest up to the upper level within complex networks involved in the co-operative production of local, institutional, sectoral and multi-sectoral data bases. It takes into

account the specific constraints of such systems, including the need to minimize the repetitive recording of the same data elements and to secure full compatibility with international information systems.

The format is presently implemented with such standard documentary software packages as TEXTO and Micro-CDS/ISIS which are commonly used in the less developed countries, especially in Africa, and could be installed on any equivalent software. Programmes have been produced for the routine export and import of data among systems using either softwares and for reformating in the BABINAT format data downloaded from any data base (under TEXTO).

Further to a test under a preliminary version in a few countries, the format is now being implemented in a first operational version in national information systems of such countries as Cameroon, Côte d'Ivoire, Madagascar and Senegal. In addition, it has been adopted by the French institutions producing bibliographic data bases related to the less developed countries as their common basic format.

It is anticipated that the use of BABINAT will spread while the format itself will be improved and the manual expanded on the basis of experience in its utilization. An english version is under preparation and a portuguese one contemplated.

1. STRUCTURE AND CONSTRAINTS OF NATIONAL INFORMATION SYSTEMS

Partly because of the kind of technology and the models which were then available, and partly for sake of potential economies of scale, the development of national information systems in the less developed countries has been focused from the inception and till recently on "national documentation centres", either multidisciplinary or specialized.

These centres are generally attached to high levels of the structure of an institution of the public sector. They are made responsible for gathering, organizing, processing, preserving and disseminating the documents produced by the organizations active in the considered sector(s). They are also often responsible for undertaking all or part of these documentary functions for the documents produced in other countries and held by the same organizations. In most cases, such centres are also appointed, complementarily, as the national focal point in order to ensure the country's participation in international information systems, either subject or mission oriented or regional (tough such mandates do not always fit with the distribution of competencies at the national level). Seldom will a single administrative structure be entirely in charge of all aspects of a given sector. Even if this happen, relevant information is produced and kept by other organizations beyond its sphere of authority. In addition, each administrative structure is in fact made of a complex hierachized set of specialized units, at any level of which more or less functional documentation units may be found.

The need for co-operation among the various documentation units belonging to the same organizational structure or sector was of course stressed from the inception of efforts towards the organization of documentation in the less developed countries. It was soon noticed and has not yet been contradicted that the concept of "documentation networks", if it early appeared, did not however turn itself into concrete achievements with regards to the establishment of effective information systems [1]. These co-operative networks are based as a matter of fact in most cases upon the good will of each participating unit, generally represented only by the one time person in charge. They remain largely informal and loosely structured for what concerns both their technical processes and their management. The only real rule in such networks is the obligation for participating units to provide records of the documents produced by their parent organization in the format defined by the documentary system of the coordinating centre. This format respond to the requirements of this particular system but is seldom in a position to integrate the variety of particular requirements found at the level of the participating units. In practice, it is superimposed to a number of 'local' formats, which may be as big as the number of participating units itself.

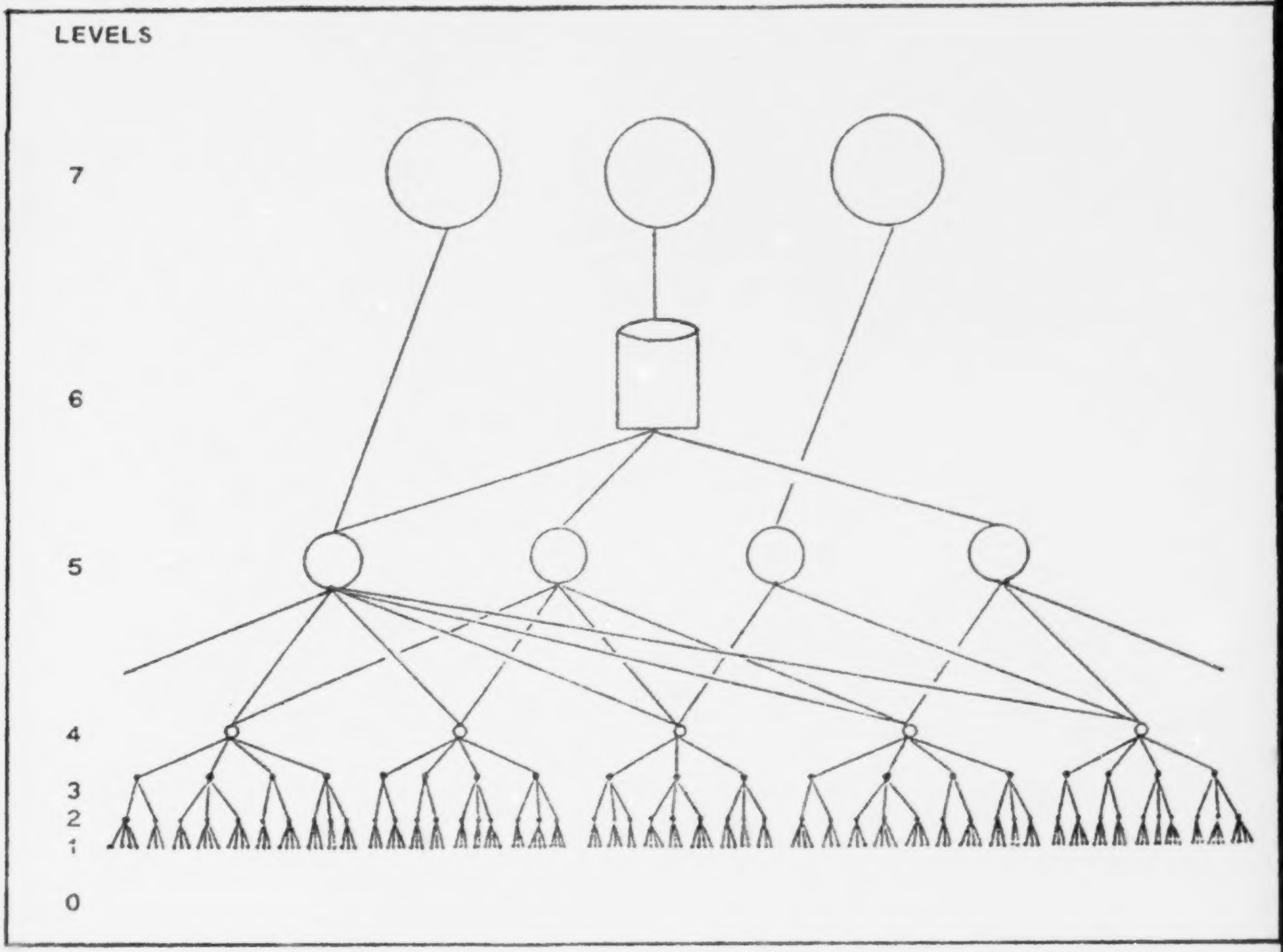
One may therefore observe the establishment of information infrastructures, whatever their level of diversification, bound to a logic of participation into an external, or upper level, network which should have priority over the satisfaction of users needs at the local level. Their effectiveness tends, as a result, to diminish as the number of participants increases, while the level of national bibliographic control, participation into international systems and service remains unsatisfactory.

From this relatively long and partly successful experience, one obvious conclusion arises. Information need to be controled at the very place it is created and used and where it remains for the largest part of its active life, that is the elementary units within an organization. National centers are located too far away from both the information producers and users and the local units, considering physical distance as well as administrative barriers. They experience great difficulties in maintaining a constant flow of acquisition and dissemination. The scarcity and rarity of usable information tend to exacerbate the natural retention tendancies.

The de facto structure of a national information system, which should be understood as a concept, or design, more than an institutional, or material, construction, can be described as a complex network of components spread over eight (at least) levels (Figure 1). Local information units may , or rather should, exist within each elementary unit of the organizations where a specific activity is implemented with significant resources, expecially professional staff (level 1). Thus they could be interwoven with the core of the "system" which is composed of the producers and users of information (level 0). These local units are linked with intermediate units at the upper levels of the organizational structure (level 2 and 3) which are all connected with an organization-wide unit (level 4). Since in most cases, the information related to any sector of activity is distributed among several national organizations, a fifth level is made of sectoral units.

Figure 1.

Schematic representation of the basic structure of a national information system



LEVELS
0. Users/Producers of information. Personal or ad hoc data bases
1. Service, municipal office, research station, etc. Local data bases
2. Division, District office, Research centre/department, etc. Aggregated local (divisional) data bases
3. Directorate, Regional/Provincial office, Research Insitute. Aggregated local (departmental) data bases
4. Technical Ministry, Autonomous regional administration, etc. Aggregated institutional/national data bases
5. Sector of activity, eg. agriculture, health, industry,etc. Aggregated national sectoral data bases
6. National. National multisectoral data bases
7. Exterior. Regional and International data bases

The sectoral data bases maintained at the former level may be merged, fully or in part, into a single national data base at the sixth level, were a national centre might exist. The seventh level consists of the external world where international systems, either regional or worldwide, should receive appropriate input from the national sectoral or global data bases and provide them with access to their own resources.

Note that the term 'unit' refers here to organized information functions rather than institutional bodies.

Data bases need to be set up and operated for effective information resources management at levels 1 to 6, bearing in mind that from level 2 these data bases should be compiled from extracts of those of the lower levels. In addition specific requirements may exist at each level and some of the corresponding data might need to be preserved at the upper levels. Conversely, it may well be that below level 4, the available information personnel is not sufficiently skilled in order to produce full and correct records, though it could make a limited, yet useful and necessary, contribution to the control of information, while the users/producers themselves could also participate if compatible procedures tailored to their own information needs could be devised.

Because of the interdependance among the various units composing an institution and the natural overlap between the attributions or areas of concern of the various organizations within a single or different institutional structures, information need to be exchangeable between any point of the network and any other one from level 1 to level 6. In addition, national information should be forwarded to international information systems, this contribution being a condition for having access to their resources.

Under present circumstance, where data bases formats are institution or unit specific, due to the absence of a reference format, these exhanges imply full or partial transcription of the data elements and reprocessing of the records for each exchange. Meanwhile the real differences between two records are not likely to roughly exceed 20% of the substantive data elements and 40% of the conventions for their presentation.

The same national record, eg. of a document on a programme for expanding the production of a medicinal plant in order to reduce dependancy from imported drugs and improve the effectiveness of an eradication campaign, for instance, will be subject to as many records as there are documentation unts which hold it, plus as many reprocessing as there will be point to pint exchanges. It will further need to be passed to at least two different international systems, eg. APINMAP and AGRIS, whose formats and specifications are different enough to require again two discrete operations of reprocessing.

Such multiple processing of the same data are implemented at the expenses of a more comprehensive control of national information, utilization of international information and provision of more effective services to the users. This wastage of resources is not acceptable. The organization, management and above all methods of information systems should be primarily oriented towards the elimination as far as possible of the burden of preparing multiple records, in particuler by using for data base design a "meta-format", fully compatible with international standards and the specifications of international information systems, which allows for the automatic production of different versions of the same record with minimal human intervention.

2. BENEFITS AND LIMITATIONS OF THE USE OF MICRO-COMPUTERS FOR INFORMATION WORK IN THE LESS DEVELOPED COUNTRIES

The most critical feature of the information infrastructure in the majority of the less developed countries is the shortage of manpower and often its insufficient qualification. Meanwhile, the successive steps in information processing, from accession to delivery and exchange, imply the repetition of similar tasks, more specifically the successive recording of identical data elements on various forms. Micro-computer based systems can eliminate this constraint and thus release staff for more productive activities [2]. They further offer a structured, though flexible, framework, and possibly interactive support, for implementing the various routines of information processing. This greatly reduces the negative effects of the generally loose definition of work flows and procedures in manual operations and/or of their erratic observation by often insufficiently trained personnel, whose working conditions and compensation are not such that they could really be motivated.

It is fascinating to note that the same arguments which were presented some twenty years ago against the first installation of a computerized documentation system in a developing country, Morocco [3], are still voiced, in particular by information specialists from the North as well as from the South, against the use of micro-computers. It is rightly pointed out that information technology, especially micro-computers, are nothing but a tool which can not by itself overcome 'unsuitable' conditions and lend to real benefits. It would therefore be advisable to introduce them only when an appropriate stage of 'institutional maturity' has been reached [4]. No yardstick is however proposed in order to determine if such a stage has been reached. Less caution is in practice applied in the introduction of other modern, and possibly dangerous, technologies, when they are more profitable.

There is certainly much truth, in principle, in Parker's point that 'Projects, if they are to succeed, must be small scale, unambitious and long term... The key to success is smallness and simplicity' [5]. It remains to be demonstrated that the old fashioned methods are more simple than those which use modern technology.

As a matter of fact, the use of a modern technology like the micro-computer is a significant asset in the self esteem of the information specialist as well as in the recognition of his/her professionalism and the technicity of the work by administrators and users. In societies predominantly marked by the 'oral tradition', little prestige will ever be associated with the handling of printed matter. Notwithstanding its fallacy, the computer magic is positive when it introduces its servants among the people worth consideration.

Few documentation units in the less developed countries need to keep large files. Even national sectoral bibliographic data bases could now easily be accomodated in today's stand alone micro-computers. It is thus possible now to achieve the kind of decentralization which was considered as the major potential benefit of micro-computer tecnology and as a prerequisite for the effectiveness of information systems [6]. Shared use of larger hardware, and even of a micro-computer, always prove cumbersome for a documentation unit which constantly needs to be able to access its files.

It further opens the gate for the establishment of national or regional co-operative data bases (compiled from a variety of sources), which are seen as the only means for the less developed country to reduce their growing dependance from the international sources, as they become more and more easy to access, and possibly take their share in the international exchanges of information with value added products [7].

The obstacles which have been discussed at length in earlier literature on the topic [8] have obviously not vanished. If equipment and supplies are more widely available at most locations, they also are often over-priced as compared to the current prices in the North. While computer firms tend to mushroom in many capital cities of the South, their reliability may be dubious and their life span short. The availability of funds from the current budgets to cater for amortization, maintenance and supplies follows the fate of declining economies and Government funding. Few manufacturers seem to even understand what "tropicalization" of their products may mean. Customer support for hardware and, more drastically, for software is minimal when not simply inexistent. Information professionals presently in charge of the documentation units had little or no training in the use of micro-computers, while it remains to be demonstrated that those currently trained by the various schools of the South, and even the North, will in fact be better prepared. The standardization of hardware and software is still in most cases wishful thinking, especially to the extent most investments are bound to a variety of foreign aid programmes, whose coordination is another standing item on the agenda of international conferences.

Anyone who actually had to look for fixing a duplicator, buying a filing cabinet or simply catalog cards or regular A4 paper in many of those places travel agents call a paradise would know however that the above mentioned "obstacles" are not peculiar nor more prohibitive as compared to those one faces when using traditional methods. If a micro-computer needs power, so do the staff to reach its office at the 10th floor of a Government building or simply write and read in the relative darkness of most offices.

The most pervasive and significant change which occured during the past few years is the proliferation of micro-computers in all types of working environments in the less developed countries. This is probably due to their relatively low cost as well as to the spread of computer literacy among national and expatriate staff. So the real question is not if and when could this technology be introduced but how to avoid its misuse.

Except when the micro-computer is a central component in a well designed project specifically geared towards the development of information services, two dangerous trends can be observed.

In first place, documentation units are allocated a machine which happen to be available, or are encouraged to use one available in the mother institution or conversely struggle by themselves for having access to it. In the absence of proper system design, selection of software and documentary applications, and training, this a priori positive move results, more often than not, in the establishment of some kind of surrealist data base, ingenuously structured along the misinterpretation of a general purpose data base software (mostly D.Base II), by a self promoted specialist with an impressive background in computerized accounting. Non standard data elements are eventually retrieved and displayed in curiously truncated forms. Obviously no change can be made to the system and hardly the data could be exchanged with any other one.

Parallely, based upon the assumption, or sometimes reality, that there is no such facility as a regular documentation unit anywhere around, people associated with specific projects, in many instances expatriates, who happen to be information conscious, embark into the compilation of bibliographic or referral files with generally an approach and results similar to those mentioned in the previous case. It also often happens that this work is done with ordinary word-processing packages.

If, as it is frequent, two such endeavours take place in the same country, or organization, at the same time, there is the highest probability that the hardwares used will be incompatible, would it be only because of different diskette sizes, as well as the softwares, of course. It may well happen, as we recently observed in one Ministry, that the same data are discretely compiled in two such specially home made files, with very specific, yet undetermined, utilizations in mind, it goes without mentioning.

The era of rare files, ultimate transformation of the rare books, with the same costs and difficulties of access for the user is before us. Such well-meaning but isolated attempts at making information more readily available will result in increased dispersion, reduced accessibility, and full incompatibility, not to mention the cumulation of unnecessary expenses for the development and operation of these isolated systems. Unfortunately the same scenario may well apply in the case of documentation projects, when several ones are engaged in the same country by different agencies without proper co-ordination and install different documentary systems. This is a common situation. We once discovered that three fully incompatible systems were being planned in a country of some 400.000 inhabitants whose only benefit would have been to stand for the world record of discrete documentary systems per capita.

It is thus urgent that a standard tool for the creation and operation of bibliographic data bases with micro-computers becomes available. This includes both functional software(s) and a bibliographic format ready to run with them, thus alleviating all efforts associated with the selection of software and format and the developpement of the application. Such a tool should at the same time meet the requirements resulting from the particular conditions faced by information units and systems in the less developed countries.

3. SPECIFICATIONS FOR AN ADAPTED FORMAT

The efforts which were initiated from the inception of the UNISIST programme in order to eliminate incompatibilities among bibliographic data bases had to take into account as a starting point the situation prevailing in the industrialized countries where it existed a relatively large amount of machine-readable data organized along formats and rules pecular to a broad variety of information systems. The situation in the less developed countries is still today radically different.

Computerized bibliographic data bases are still relatively scarce and have not yet reached large sizes, ranging from a few hundreds of thousands records at most to some ten thousands more generally. As a matter of fact, the establishment of computerized documentation systems is only at its initial stage in most cases, especially in Africa. It should thus be possible, in principle, to avoid the proliferation of particular formats, if an adapted reference format could become available.

Being a reference format, it obviously would be subject to specific adaptations from one installation to the other, without the intrinsic compatibility between the various applications being lost, provided a few simple precautions are taken. But in offering a comprehensive and directly applicable tool it is possible to secure a significant economy of scale in the initial methodological investment while preserving their specificity and homogeneity.

The main requirements for such a format are:

COMPLETENESS

- present a set of fields suitable for recording a full description of the types of documents most commonly found in the documentation units of the less developed countries, including development projects reports and feasibility studies;

COMPACTNESS

- keep however the total number of fields to the minimum;

ADAPTABILITY

- limit as far as posible the number of mandatory fields in order to leave each user the greatest flexibility for the organization of its procedures;
- use a modular structure facilitating the use of the format as such as well as its adaptation to local requirements;
- be easy to adjust to local requirements (eg. use of national languages, addition or deletion of fields, etc.);

VERSATILITY

- allow for an effective utilization of data bases by the lowest level local documentation units;
- allow for the compilation of co-operative data bases by merging of data bases produced at any level in a structured network and their effective use;
- keep to an absolute minimum the transcriptions and adaptations of data when exchanging records;

INTEGRITY

- preserve the fullest possible homogeneity, specificity and autonomy of national data bases, by keeping apart those few extra data elements which are only required by international systems and handling with separate routines the manipulation of data in accordance to their rules when they do n suit the national system;

MULTILINGUISM

- be able to record documents taking into account a plurality of communication and vernacular languages at least for titles and possibly for indexing, if multi-lingual thesauri are used;

UNIVERSALITY

- be fully compatible with international standards, in particular those of the UNISIST Reference manual on which international systems such as AGRIS are based;
- be compatible with the Common Communication Format (CCF);
- allow for the exchange of records with international information systems with a minimum level of reprocessing;

PORTABILITY

- be adaptable on the most common micro-computers based documentary softwares, since a variety of computer systems will in any case be used;

AND, SIMPLICITY

- be as simple and easy to use as possible
- be delivered with a complete and intelligible manual.

4. STANDARD BIBLIOGRAPHIC FORMATS

The barrier to the exchange of bibliographic information created by the incompatibility among formats was noted from the inception of the UNESCO's UNISIST programme. This led in the seventies to the proliferation of standard formats, giving birth to four parent, thus somewhat similar but yet antagonist, groups of formats, which were supposed to overcome this barrier.

Those geared towards the universal bibliographic control, in first place, which are best represented by UNIMARC [9]. The basic structure of the record they propose is meant for a comprehensive notice as used in a national library in order to produce its various traditional catalogues and the national bibliography, whose principal entry is the data element of 'Title and associated statement of responsibility'. Such formats appear relatively complicated and not much suitable for the management of data bases in small specialized documentation units, which lack the sizeable professional staff qualified for using such a format.

A second group consists of the formats derived from the UNISIST Reference manual [10]. The discrete data elements are there allocated to specific fields, what makes them more readily usable for the management of national data bases.

Most formats of the international information systems are in line with the UNISIST manual, eg. AGRIS [11]. However they may be regarded as a third group as they have to introduce specific features according to their particular type of operation, which do not necessarily correpond to the requirements of national data bases. In addition, they are subject to changes as the international systems evolve which will be forced upon the national data bases unless the latter prefer to stick to the previous format, thus loosing their initial compatibility.

The last group is made of so-called communication formats, whose major representative is the Common Communication format (CCF) [12]. Though such formats are in principle meant as intermediate devices for export and import of otherwise formated data, they are often used as the basic format for the creation and operation of data bases, disregarding the intrinsic complications this is artificially adding. A further inadequacy, with regards to our concern, is their alignment on the basic organization of data elements found in the first group.

From the above review, which had to remain superficial given the space limitations of the present paper, it could be concluded that there is no format able to respond to all the constraints previously mentioned.

Meanwhile, it is not possible to satisfy oneself with the somewhat abusive assumption which is often presented by information specialists that compatibility is granted by the use of standard documentary softwares. Although they may de facto offer a basic layout for the presentation of data, the arrangement and recording rules of the various data elements have to be defined before any real application could be implemented. The demonstration or default formats eventually provided with the softwares could certainly not do. The Inter-Regional co-ordinating committee of development associations and OECD Development Centre recently proposed a format for the creation and management of a bibliographic data base using Micro-ISIS which illustrates this requirement but did not mean to satisfy all the specific requirements of national systems [13]. Even if effective measures of standardization could be enforced, it is further doubtful that the exclusive use of a given software in any one coutry is likely nor desirable.

5. ORIGIN AND PURPOSE OF BABINAT

The need to develop such a format and eventually satisfy all the previously mentioned constraints became pressing in 1986 when large scale projects for the establishment of national networks in Africa became operational. This was in particular the case with an FAO supported project for the establishement of a national agricultural information network in Côte d'Ivoire (REDACI, Réseau national de documentation agricole en Côte d'Ivoire) where a national data base was to be set up with the participation of some fourty documentation units scattered troughout the country, a number of them being already equiped with micro-computers. Similar operations in other countries were contemplated at the same time.

Parallely, the French organizations (Centre de Coopération Internationale en Recherche Agronommique pour le Développement -CIRAD-, Institut Français de Recherche Scientifique pour le Développement en Coopération -ORSTOM-, the national documentation network on developing countries IBISCUS and its further participants) which are currently producing bibliographic data bases on literature related to the less developed countries and supporting their efforts towards the development of their information infrastructure, were looking for a minimum format which could facilitate the exchange of data among them.

This convergence provided an opportunity for the preparation of a reference format for national bibliographic data bases, which was called BABINAT [14]. The work was coordinated by CIRAD and benefited from the active participation of a number of specialists from these organizations and external advisers as well as from interaction with FAO.

The objective was to develop a format which would offer a complete, though mimimum, set of fields and functions in compliance with the above discussed specifications. Meanwhile, the national systems should be able to introduce any adaptation or extension as required in order to meet their particular needs without loosing the compatibility with international information systems or other national systems using the same format.

6. DESCRIPTION OF BABINAT

6.1 Highlights of specific features in BABINAT

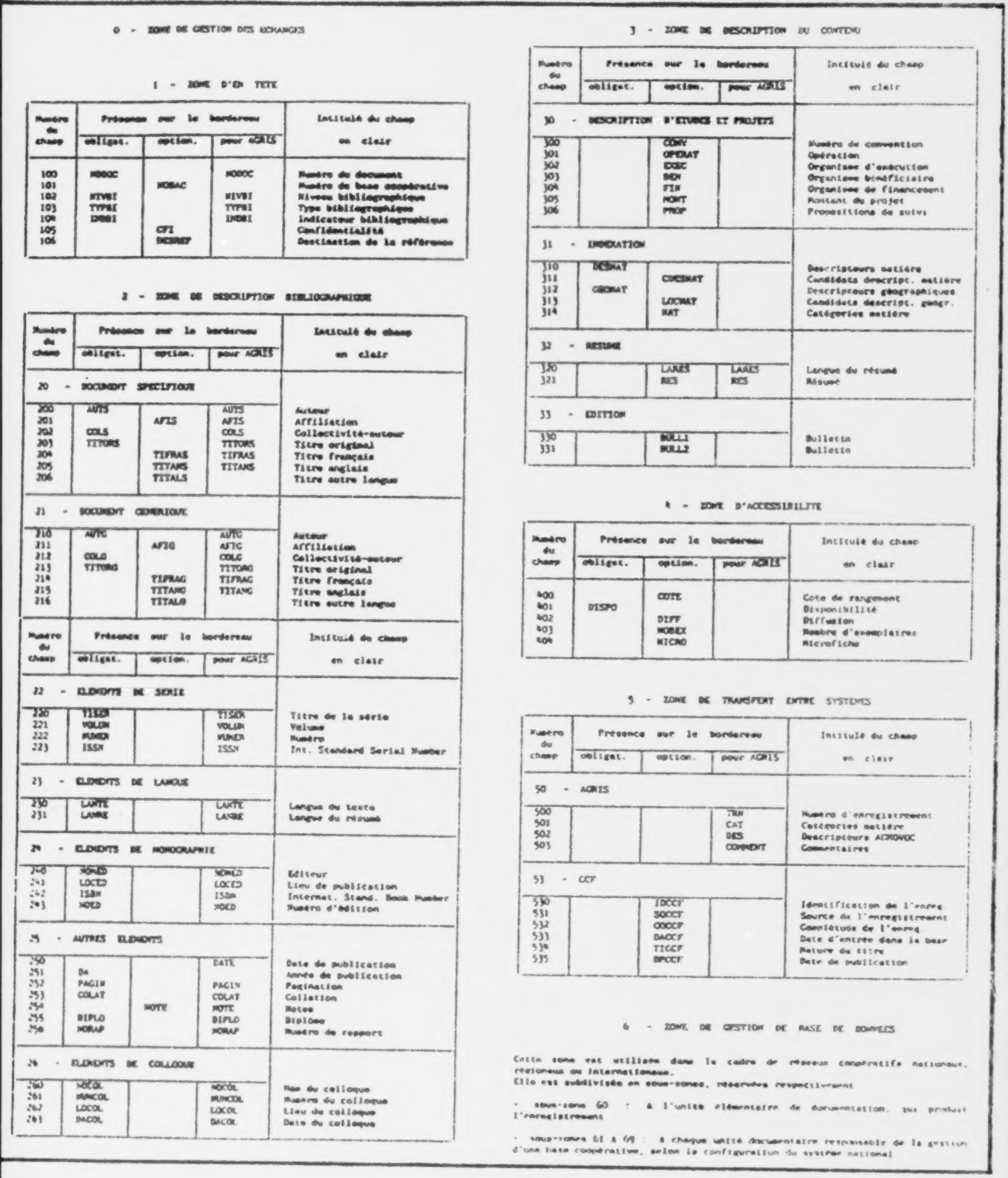
BABINAT offers a complete format for the production and handling of bibliographic records of the major types of documents processed in national information systems in the less developed countries, enabling the creation and operation, with micro-computer based documentary systems, of national bibliographic data bases. The format is designed for an utilization with standard documentary software packages such as TEXTO or Micro-CDS/ISIS; it can be easily installed on any similar software.

Basic rules, in line with international standards for the preparation of data, are presented in the manual in a simple form. These rules have been compatibilized with AGRIS and the Sahelian documentation network (West Africa) RESADOC. It is anticipated that a series of companion technical manuals will be prepared at a later stage in order to offer orientation in the implementation of typical routines.

The main portion of the format is made of a full set of fields (63) as required for the handling of a national data base, both at a local documentation unit and at a national documentation centre (or any other intermediate level). It is complemented by a series of additional sets of fields as required for the reprocessing of data or inclusion of supplementary data in accordance with the rules of other systems with which one wishes to exchange information. In the present version 1 such sets of fields have been included in the manual for export in AGRIS and CCF formats while another one for RESADOC is under preparation; others may be added as required. Therefore, the homogeneity and full operationality of the national data base is preserved, while participation in cooperative schemes is made easier by minimizing the need for reprocessing in export or import routines. AGRIS and RESADOC correspondence of each field in the main portion of the format are identified in the manual.

Fields are ordered in logical blocks and sub-blocks and numbered sequentially. Their tag number can be used for their identification in the various programmes of the documentary software packages. Meanwhile, mnemonic designations and full names in national languages can be allocated to the fields within each national system, in order to facilitate the utilization of the format. Mnemonics in French are proposed in the manual.

Figure 2. Main structure of the BABINAT format



0 - ZONE DE GESTION DES ECHANGES

1 - ZONE D'EN TETE

Numéro du champ	Présence sur le bordereau			Intitulé du champ en clair
	obligat.	option.	pour AGRIS	
100	NODOC		NODOC	Numéro du document
101		NOBAC		Numéro de base coopérative
102	NIVBI		NIVBI	Niveau bibliographique
103	TYPBI		TYPBI	Type bibliographique
104	INDBI		INDBI	Indicateur bibliographique
105		CFI		Confidentialité
106		DESREF		Destination de la référence

2 - ZONE DE DESCRIPTION BIBLIOGRAPHIQUE

Numéro du champ	Présence sur le bordereau			Intitulé du champ en clair
	obligat.	option.	pour AGRIS	
20 - DOCUMENT SPECIFIQUE				
200	AUTS		AUTS	Auteur
201		AFIS	AFIS	Affiliation
202	COLS		COLS	Collectivité-auteur
203	TITORS		TITORS	Titre original
204		TIFRAS	TIFRAS	Titre français
205		TITANS	TITANS	Titre anglais
206		TITALS		Titre autre langue
21 - DOCUMENT GENERIQUE				
210	AUTG		AUTG	Auteur
211		AFIG	AFIG	Affiliation
212	COLG		COLG	Collectivité-auteur
213	TITORG		TITORG	Titre original
214		TIFRAG	TIFRAG	Titre français
215		TITANG	TITANG	Titre anglais
216		TITALG		Titre autre langue
Numéro du champ	Présence sur le bordereau			Intitulé du champ en clair
	obligat.	option.	pour AGRIS	
22 - ELEMENTS DE SERIE				
220	TISER		TISER	Titre de la série
221	VOLUM		VOLUM	Volume
222	NUMER		NUMER	Numéro
223	ISSN		ISSN	Int. Standard Serial Number
23 - ELEMENTS DE LANGUE				
230	LANTE		LANTE	Langue du texte
231	LANRE		LANRE	Langue du résumé
24 - ELEMENTS DE MONOGRAPHIE				
240	NOMED		NOMED	Editeur
241	LOCED		LOCED	Lieu de publication
242	ISBN		ISBN	Internat. Stand. Book Number
243	NOED		NOED	Numéro d'édition
25 - AUTRES ELEMENTS				
250			DATE	Date de publication
251	DA			Année de publication
252	PAGIN		PAGIN	Pagination
253	COLAT		COLAT	Collation
254		NOTE	NOTE	Notes
255	DIPLO		DIPLO	Diplôme
256	NORAP		NORAP	Numéro de rapport
26 - ELEMENTS DE COLLOQUE				
260	NOCOL		NOCOL	Nom du colloque
261	NUMCOL		NUMCOL	Numéro du colloque
262	LOCOL		LOCOL	Lieu du colloque
263	DACOL		DACOL	Date du colloque

3 - ZONE DE DESCRIPTION DU CONTENU

Numéro du champ	Présence sur le bordereau			Intitulé du champ en clair
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30 - DESCRIPTION D'ETUDES ET PROJETS				
300		CONV		Numéro de convention
301		OPERAT		Opération
302		EXEC		Organisme d'exécution
303		BEN		Organisme bénéficiaire
304		FIN		Organisme de financement
305		MONT		Montant du projet
306		PROP		Propositions de suivi
31 - INDEXATION				
310	DESMAT			Descripteurs matière
311		CDEMAT		Candidats descript. matière
312	GEOMAT			Descripteurs géographiques
313		LOCMAT		Candidats descript. geogr.
314		MAT		Catégories matière
32 - RESUME				
320		LARES	LARES	Langue du résumé
321		RES	RES	Résumé
33 - EDITION				
330		BULL1		Bulletin
331		BULL2		Bulletin

4 - ZONE D'ACCESSIBILITE

Numéro du champ	Présence sur le bordereau			Intitulé du champ en clair
	obligat.	option.	pour AGRIS	
400		COTE		Cote de rangement
401	DISPO			Disponibilité
402		DIFF		Diffusion
403		NOBEX		Nombre d'exemplaires
404		MICRO		Microfiche

5 - ZONE DE TRANSFERT ENTRE SYSTEMES

Numéro du champ	Présence sur le bordereau			Intitulé du champ en clair
	obligat.	option.	pour AGRIS	
50 - AGRIS				
500			TRN	Numéro d'enregistrement
501			CAT	Catégories matière
502			DES	Descripteurs AGROVOC
503			COMMENT	Commentaires
53 - CCF				
530		IDCCF		Identification de l'enreg.
531		SOCCF		Source de l'enregistrement
532		COCCF		Complétude de l'enreg.
533		DACCF		Date d'entrée dans la base
534		TICCF		Nature du titre
535		DPCCF		Date de publication

6 - ZONE DE GESTION DE BASE DE DONNEES

Cette zone est utilisée dans le cadre de réseaux coopératifs nationaux, régionaux ou internationaux.
Elle est subdivisée en sous-zones, réservées respectivement

- sous-zone 60 : à l'unité élémentaire de documentation, qui produit l'enregistrement
- sous-zones 61 à 69 : à chaque unité documentaire responsable de la gestion d'une base coopérative, selon la configuration du système national

The format can accomodate, subject to the specifications of the software used, repeatable fields and sub-fields which provide more flexibility in the processing of information. Repeatable fields further facilitate the preservation of local information in cooperative data bases.

Of the 63 fields available for the description and handling of the various types of documents at the national level, only one third is compulsory, acccording to the type of document and bibliographic level considered. This allows for the desirable flexibility in the specification of a national format and the planning of data base compilation. A national system can obviously add the fields which it would feel necessary in order to meet local requirements. The modular structure of the format facilitates such adaptations.

It should be noted that a number of fields are offered which correspond to specific requirements of documentation units in developing countries. In particular a series of fields is available for describing the contents of projects reports and feasibility studies. They could be used for providing planners and decision makers with information analysis reports.

The format also allows for the handling of documents in various languages, participation in information systems which use a variety of languages and the handling of multilingual data bases.

6.2 Overall structure

BABINAT is organized in a series of blocks in which fields containing the same type of data elements, or data elements with similar functions, are grouped (Figure 2). These are:

Block 0: Control fields.

Reserved for data base managers to record directories, field labels and general identification data required for the interchange of data as specified by the various systems.

Block 1: Header.

Includes 7 fields related to the identification of the record, specification of the type of document and its description (bibliographic level, which is handled by simple self-contained codes), future use of the record.

Block 2: Bibliographic description.
Includes 35 fields, distributed among 7 sub-blocks. The use of the fields, which represent the basic data elements related to authors, title, source is determined by the type of document and bibliographic level(s) in the record.

Block 3: Contents description.
Includes 16 fields in 4 sub-blocks related to the various types of indexing and abstracting of the document to be used for retrieval and production of printed bibliographies.

Block 4: Accessibility of the primary document.
Includes 5 fields related to the conditions of acces to the primary documents such as location, cost, availability of microfiches, eventual restrictions, etc.

Block 5: Transfer between systems.
This block is composed of a series of sub-blocks containing the additional compulsory fields required for the production of records acceptable by the various systems with which references should be exchanged. They should be defined by each national system according to its own cooperative agreements. For the time being the manual includes a sub-block for AGRIS (4 fields) and another for CCF (6 fields).

Block 6: Data base management.
This block is to be defined by each national system in order to accomodate those fields which it feels are required for the automatic monitoring of data base management information at the various levels.

Blocks 7 to 9 can be further defined for specific applications within each national system. However, it is anticipated that at least block 7 might be used in a later version of the reference manual in order to offer a series of standard fields for basic operations in the handling of collections, such as acquisition and circulation.

6.3 Micro-computer applications

Since the sponsors and most present users of BABINAT operate with the TEXTO software (distributed by Chemdata, France), a complete application using this software has been developed. They have been prepared with LOGOTEL, a programming language associated with TEXTO which enables the TEXTO user to develop specfic applications. A parallel application with Micro-CDS/ISIS, version 2 (distributed by UNESCO) was also developed (see Field Defintion Table -FDT- in Figure 3).

Both TEXTO and Micro-CDS/ISIS offer the basic functions for documentation work (entry, corrections, storage and retrieval).

Four complementary programmes are presently available in the TEXTO application:

- BABIPLUS for data entry,
- BABICOR for input checks,
- BABIBUL for editing bibliographic bulletins,
- BABAGRIS for preparing records to be forwarded to AGRIS.

BABIPLUS selects those fields in the format which are required in accordance to the type of document processed and the selected bibliographic level of its description. The relevant fields only are displayed in their logical sequence, thus minimizing the time and effort in the preparation of the input as well as most risks of common errors or omissons.

BABICOR undertakes automatic corrections whenever possible or points to possible errors it detects, once the input of a record has been completed. These checks are based upon the specification of document type and bibliographic level in the header. The absence of compulsory fields or unproper presentation of entries can, to some extent, be determined by automatic routines, thus enhancing greatly the quality of input.

BABIBUL allows for the preparation of printed bibliographic bulletins. It rearranges the contents of selected records and their presentation. It sorts the records according to a classification scheme, which can accomodate two levels, whose entries are recorded in particular fields. It finally produces the master. A comparison between the image of a typical record (Figure 4) and the sample page of a bibliographic bulletin (Figure 5) shows the extent of the data preparation implemented by this programme.

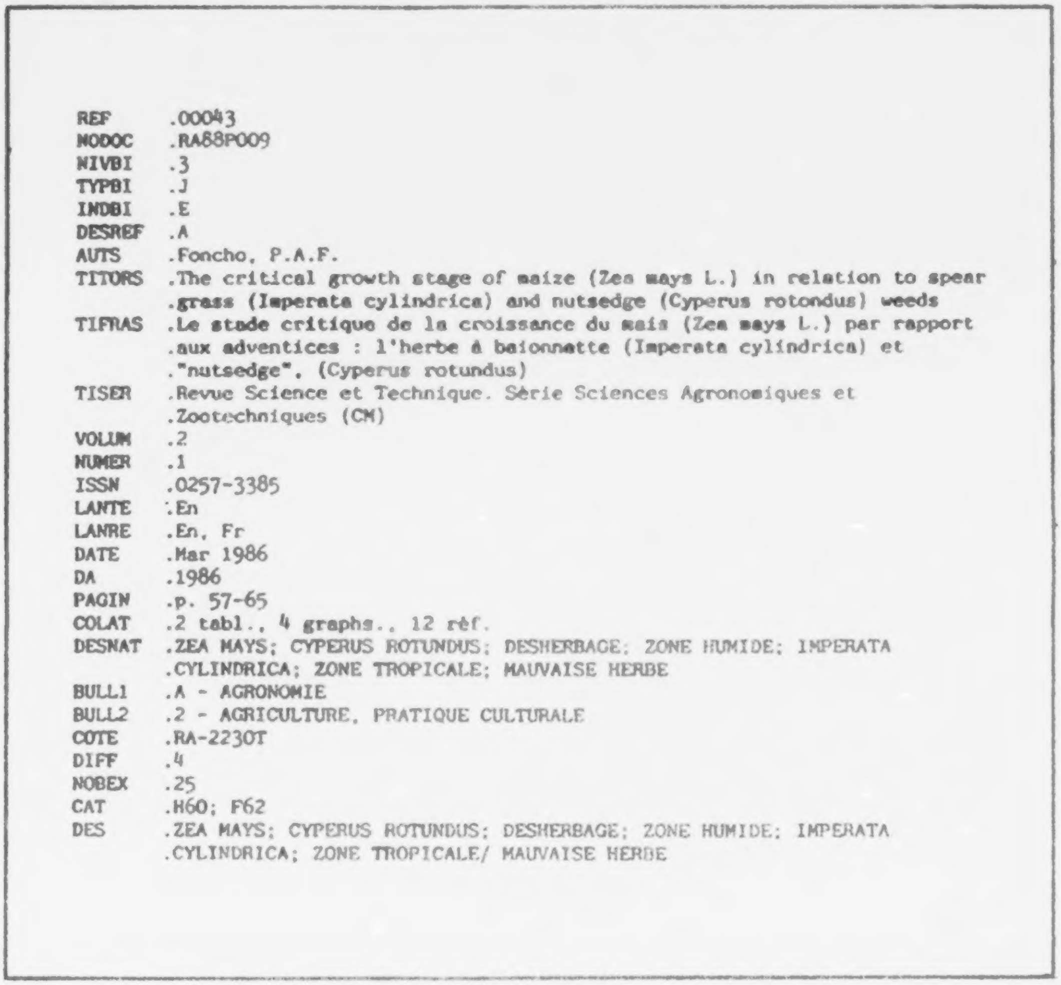
BABAGRIS reprocesses the records which have been earmarked for input into AGRIS so that a file complying with AGRIS rules (AGRIS Technical Note 19) could be prepared. For this purpose it selects the fields in the BABINAT format which correspond to compulsory AGRIS fields and makes the required changes in their presentation when necessary (eg. substituting french with english abbreviations). The fields are further

Figure 3. Micro-CDS/ISIS FDT of BABINAT

Tabl. Définition Champs (TDC) Base de données : BABINA

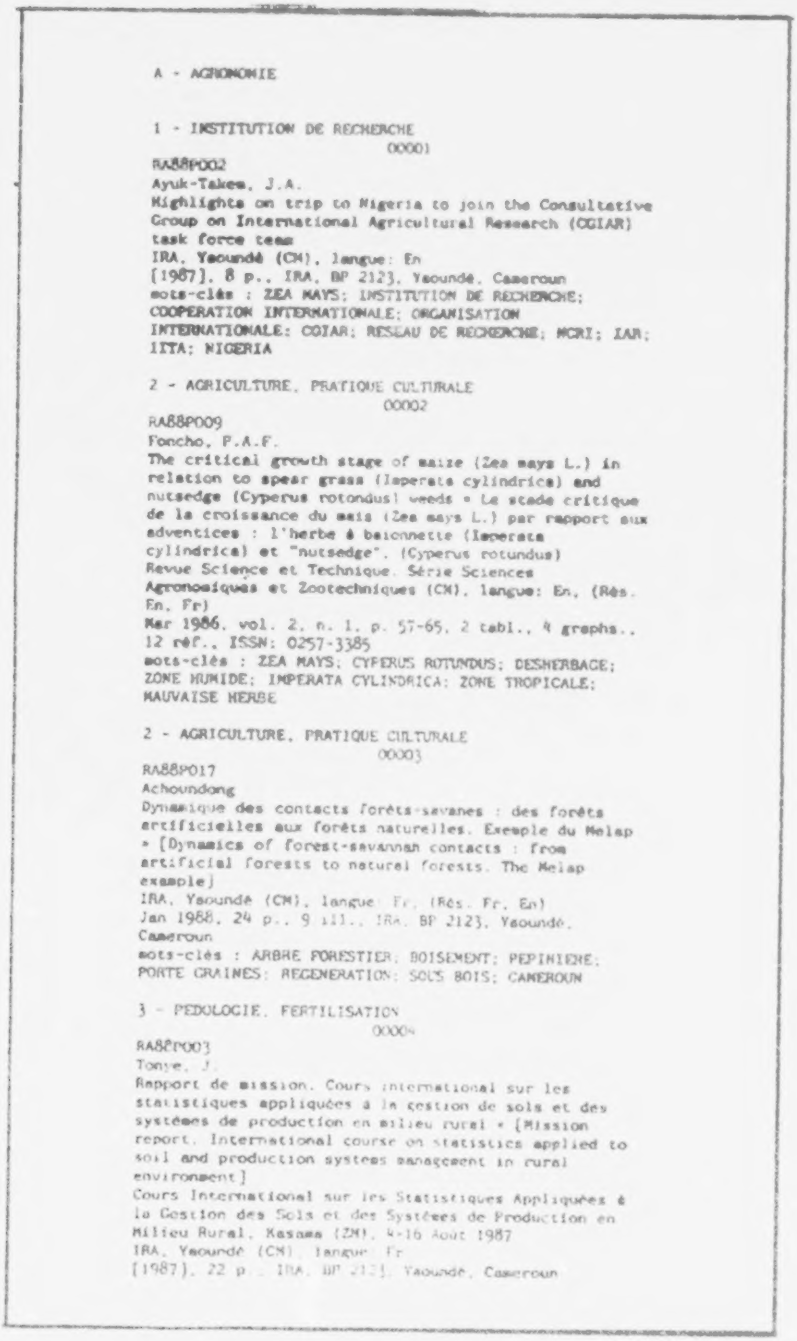
?	Et.	Nom	Lon	Typ	Rep	Delimiteurs/patrons
-	100	NODOC	8	P		AA99A999
-	101	NOBAC	9	P		AA9999999
-	102	NIVBI	1	N		
-	103	TYPBI	1	A		
-	104	INDBI	10	A		
-	105	CFI	1	N		
-	106	DESREF	5	A		
-	200	AUTS	40	X	R	
-	201	AFIS	200	X	R	vwxyz
-	202	COLS	200	X	R	vwxyz
-	203	TITORS	350	X		
-	204	TIFRAS	350	X		
-	205	TITANS	350	X		
-	206	TITALS	350	X		
-	210	AUTG	40	X	R	
-	211	AFIG	200	X	R	vwxyz
-	212	COLG	200	X	R	vwxyz
-	213	TITORG	350	X		
-	214	TIFRAG	350	X		
-	215	TITANG	350	X		
-	216	TITALG	350	X		
-	190	AUTM	40	X	R	
-	191	AFIM	200	X	R	vwxyz
-	192	COLM	200	X	R	vwxyz
-	193	TITORM	350	X		
-	194	TIFRAM	350	X		
-	195	TITANM	350	X		
-	196	TITALM	350	X		
-	220	TISER	200	X		
-	221	VOLUM	30	X		
-	222	NUMER	10	X		
-	223	ISSN	10	X	R	
-	230	LANTE	10	X	R	
-	231	LANRE	10	X	R	
-	240	NOMED	75	X	R	
-	241	LOCED	35	X	R	
-	242	ISBN	20	X	R	
-	243	NOED	40	X		
-	250	DATE	40	X		
-	251	DA	20	X		
-	252	PAGIN	30	X		
-	253	COLAT	150	X		
-	254	NOTE	150	X		
-	255	DIPLO	100	X		
-	256	NORAP	50	X		
-	260	NOCOL	300	X		
-	261	NUMCOL	5	X		
-	262	LOCOL	35	X	R	
-	263	DACOL	40	X		
-	310	DESNAT	50	X	R	
-	311	CDESNAT	50	X	R	
-	312	GEONAT	50	X	R	
-	313	LOCNAT	50	X	R	
-	314	NAT	20	X	R	
-	320	LARES	10	X		
-	321	RES	1150	X		
-	330	BULL1	50	X		
-	331	BULL2	50	X		
-	300	CONV	50	X		
-	301	OPERAT	150	X		
-	302	EXEC	150	X	R	
-	303	BEN	150	X	R	
-	304	FIN	150	X	R	
-	305	MONT	70	X		
-	306	PROP	150	X		
-	400	COTE	25	X	R	
-	401	DISPO	150	X	R	
-	402	DIFF	50	X	R	
-	403	NOBEX	5	N		
-	404	MICRO	20	X		
-	500	TRN	9	P		AA9999999
-	501	CAT	3	X	R	
-	502	DES	50	X	R	
-	503	COMMENT	150	X		

Figure 4. Sample image of a bibliographic record for an article of periodical with entries for input into AGRIS



```
REF      .00043
NODOC    .RA88P009
NIVBI    .3
TYPBI    .J
INDBI    .E
DESREF   .A
AUTS     .Foncho, P.A.F.
TITORS   .The critical growth stage of maize (Zea mays L.) in relation to spear
         .grass (Imperata cylindrica) and nutsedge (Cyperus rotondus) weeds
TIFRAS   .Le stade critique de la croissance du mais (Zea mays L.) par rapport
         .aux adventices : l'herbe à baionnette (Imperata cylindrica) et
         ."nutsedge". (Cyperus rotundus)
TISER    .Revue Science et Technique. Sèrie Sciences Agronomiques et
         .Zootechniques (CM)
VOLUM    .2
NUMER    .1
ISSN     .0257-3385
LANTE    .En
LANRE    .En, Fr
DATE     .Mar 1986
DA       .1986
PAGIN    .p. 57-65
COLAT    .2 tabl., 4 graphs., 12 réf.
DESNAT   .ZEA MAYS; CYPERUS ROTUNDUS; DESHERBAGE; ZONE HUMIDE; IMPERATA
         .CYLINDRICA; ZONE TROPICALE; MAUVAISE HERBE
BULL1    .A - AGRONOMIE
BULL2    .2 - AGRICULTURE, PRATIQUE CULTURALE
COTE     .RA-2230T
DIFF     .4
NOBEX    .25
CAT      .H60; F62
DES      .ZEA MAYS; CYPERUS ROTUNDUS; DESHERBAGE; ZONE HUMIDE; IMPERATA
         .CYLINDRICA; ZONE TROPICALE/ MAUVAISE HERBE
```

Figure 5. Sample page of a bibliographic bulletin with references arranged according to two hierarchical levels



A - AGRONOMIE

1 - INSTITUTION DE RECHERCHE
00001
RA88P002
Ayuk-Takem, J.A.
Highlights on trip to Nigeria to join the Consultative Group on International Agricultural Research (CGIAR) task force team
IRA, Yaoundé (CM), langue: En
[1987], 8 p., IRA, BP 2123, Yaoundé, Cameroun
mots-clés : ZEA MAYS; INSTITUTION DE RECHERCHE; COOPERATION INTERNATIONALE; ORGANISATION INTERNATIONALE: CGIAR; RESEAU DE RECHERCHE; NCRI; IAR; IITA; NIGERIA

2 - AGRICULTURE, PRATIQUE CULTURALE
00002
RA88P009
Foncho, P.A.F.
The critical growth stage of maize (Zea mays L.) in relation to spear grass (Imperata cylindrica) and nutsedge (Cyperus rotondus) weeds = Le stade critique de la croissance du mais (Zea mays L.) par rapport aux adventices : l'herbe à baionnette (Imperata cylindrica) et "nutsedge". (Cyperus rotundus)
Revue Science et Technique. Série Sciences Agronomiques et Zootechniques (CM), langue: En, (Rés. En, Fr)
Mar 1986, vol. 2, n. 1, p. 57-65, 2 tabl., 4 graphs., 12 réf., ISSN: 0257-3385
mots-clés : ZEA MAYS; CYPERUS ROTUNDUS; DESHERBAGE; ZONE HUMIDE; IMPERATA CYLINDRICA; ZONE TROPICALE; MAUVAISE HERBE

2 - AGRICULTURE, PRATIQUE CULTURALE
00003
RA88P017
Achoundong
Dynamique des contacts forêts-savanes : des forêts artificielles aux forêts naturelles. Exemple du Melap = [Dynamics of forest-savannah contacts : from artificial forests to natural forests. The Melap example]
IRA, Yaoundé (CM), langue: Fr, (Rés. Fr, En)
Jan 1988, 24 p., 9 ill., IRA, BP 2123, Yaoundé, Cameroun
mots-clés : ARBRE FORESTIER; BOISEMENT; PEPINIERE; PORTE GRAINES; REGENERATION; SOUS BOIS; CAMEROUN

3 - PEDOLOGIE, FERTILISATION
00004
RA88P003
Tonye, J.
Rapport de mission. Cours international sur les statistiques appliquées à la gestion de sols et des systèmes de production en milieu rural = [Mission report. International course on statistics applied to soil and production systems management in rural environment]
Cours International sur les Statistiques Appliquées à la Gestion des Sols et des Systèmes de Production en Milieu Rural, Kasama (ZM), 4-16 Août 1987
IRA, Yaoundé (CM), langue: Fr
[1987], 22 p., IRA, BP 2123, Yaoundé, Cameroun

rearranged according to the AGRIS format and the resulting file is copied onto a diskette for transmission to the AGRIS input unit in Vienna.

In addition, CIRAD has produced two programmes, TXTISO and ISOTXT, written in C, which allow for the transformation of a BABINAT file in TEXTO into an equivalent file in Micro-CDS/ISIS and conversely. This enables the exchange of data within a national system where the two softwares are used simultaneously as well as any other exchange based upon ISO 2709.

An interface was also prepared for the TEXTO application which is able to reformat a file containing records retrieved from the major bibliographic systems in accordance with the BABINAT format.

7. UTILIZATION OF BABINAT

Some specific aspects of the use of BABINAT are worth mentioning here in order to illustrate its response to the constraints of national systems.

It is understood in first place that each national system will establish the list of fields it requires in blocks 1 to 4 adding those complementary fields it wishes, specify additional sub-blocks and fields in blocks 0, 5 and 6 as appropriate, and define which fields have to be completed at which level. This would normally lead to the production of a national version of the manual, including specific rules as required.

Records could be prepared either by using input sheets, of which a model is proposed in the reference manual, or directly on a micro-computer. The sequence of the fields on the input sheet corresponds to the one they have within each block in the format.

The fields to be filled in for the description of a document are determined by the bibliographic level selected, and complementarily by other indicators of the nature and contents of the document to be ticked in the header.Five standard bibliographic levels are considered, which it is assumed represent the bulk of the cases encountered in most documentation units and can further accomodate the other cases, if required:

1. Monograph,
2. Chapter or part of a monograph,
3. Article in a serial,
4. Monograph as part of a collection
5. Chapter or part of a monograph which is included in a collection.

The format can thus accomodate up to three levels of bibliographic description within a single record.

Both upper and lower case can be used. The rules for the presentation of entries and punctuation are very close to the AGRIS ones.

Several fields are offered in order to accomodate the subject indexing used by the local units, a national sectoral data base, a national multidisciplinary data base and international systems. Additional ones can be created if required. It is assumed that within a national sectoral sub-system, all participating documentation units will use the same indexing language which shall consist of a mixture of an internationally recognized thesaurus and a limited number of local descriptors as a complement; eventually the descriptors drawn from the international thesaurus will be those required by the international system in this area to which national references should be sent. The handling of "national" and "international" descriptors in two separate fields might create some problems both by imposing parallel processes of indexing and eliminating the proximity among descriptors of either category. These are overcome with the BABINAT dichotomy among a comprehensive "national" indexing recorded in specific fields and target fields in which the "international" descriptors might be repeated, in the sequence requested by the particular systems, either manually or automatically, with a minimum of effort.

The handling of a national multidisciplinary data base can be secured by including in the field 314 Subject categories, macro-descriptors in a specified occurence, or by adding fields in order to follow the same approach as above.

Geographic descriptors were however provided separate fields in order to facilitate retrieval and printing of references or indexes according to them. If required, the logical links between sets of subject and geographic descriptors can nevertheless be preserved by adapted rules of presentation, similar to those used for authors and affiliations.

Descriptors or other headings of purely local use, which could not be merged into a national indexing vocabulary, could be recorded in separate fields (311, 313) and used in the production of cards or bibliographies if required. These fields can also be used by local units which do not have personal properly trained in order to produce a full indexing.

It is hoped that the exchange of references among the various documentation units participating in a national sectoral sub-system could take place in BABINAT format without any further processing of records. The same might also be true for exchanges among different sectoral sub-systems with the posible exception of a complementary macro-indexing.

Most data elements recorded in the BABINAT format do correspond both in nature and presentation to the compulsory data elements required by international information systems, except for some minor changes which may be performed by automatic routines. A limited number of additional data elements might however be required, which can be accomodated at the time of preparing the input for these systems in the corresponding fields of specific subsets of block 5. It is therefore anticipated that the duplication of full records preparation could be eliminated almost completely by the use of BABINAT.

Since rural development is by far the predominant subject in most less developed countries, particularly in Africa, the first version of the reference manual offers a complete interface with AGRIS. A similar facility for CCF is also included in view of its role as the standard for bibliographic data exchange.

In the case of a transfer in the CCF format, the indications of segments, links and levels, i.e roughly label and directory data, will be introduced by the centre in charge of the transfer in specific fields of block 0. The fields in sub-block 53 are restricted to the factual data elements which need to be provided by the documentation unit which originally produced the record. If a national systems chooses as a general rule to transfer all its records in the CCF format, these fields will obviously be part of the the mandatory fields defined by this system. The general economy of the interface between BABINAT and CCF is similar to the one used in the case of IDIN [13].

The operation of data bases in the BABINAT format is facilitated by the eventual use of indicators of destination, to be included during the entry process, which will earmark the respective records for specific outputs such as special bibliographies or communication to another system.

The structuration of the identification number of the references facilitates their retrieval for the preparation of special bulletins such as internal publications of an organization, national or foreign acquisitions.

Two fields can be used in order to indicate selected entries, assumedly distinct from those offered by the descriptors, for the grouping of references in the body of a bibliographic list within a two level hierarchy.

Detailed information can also be provided to the users regarding the various possibilities for having access to the primary documents.

8. CURRENT STATUS AND PROSPECTS

A preliminary version of BABINAT was successfully tested in 1986-1987, at various locations in Africa and in France, including REDACI in Côte d'Ivoire, which has been able to set up a national bilbiographic data base of more than 2,000 records and provide AGRIS with input compiled with automatic routines.

The internal format presently used by CIRAD, ORSTOM and other participants in IBISCUS for the compilation of their own data bases is very close to the the version 1 of BABINAT. The latter will be used for exchanges and the production of specific subsets of these data bases related to a particular country. As a result most of the French documentation of interest to the less developed countries could be obtained in the BABINAT format and therefore be easily included into national bibliographic data bases.

In 1989, version 1 of BABINAT should be installed in national systems, either specialized or multi-disciplinary, in such countries as Cameroon, Côte d'Ivoire, Madagascar and Senegal. It is hoped that other French speaking countries will progressively adopt BABINAT as their reference format. The French organizations which have participated in the development of BABINAT might also fully merge their internal formats with it in order to simplify their procedures.

A translation of the reference manual in English is under preparation and a Portuguese one is being contemplated. If adequate funding could be obtained other versions could easily be produced.

One may also hope that similar attempts, if they should arise, will at least take BABINAT into full account and preserve compatibilty with it. It would however be a refreshing change in the usual course of affairs if organizations interested in providing the less developed countries with some kind of reference format could join their efforts with the BABINAT team in order to avoid the probable and unanimously applauded birth of a sixth group in the family of standard formats.

For the time being, BABINAT is made available free of charge by CIRAD to the interested organizations in the less developed countries which so request. CIRAD maintains a liaison with BABINAT users and provides backstopping advice as required for its utilization.

Based upon the experience which will be gained through the above mentioned operations, it is anticipated that within a couple of years an expanded version could be prepared. Meanwhile, additional standard modules or adaptations might be developed as requested in order to cater for the handling of collections, the transfer of information with a variety of major international information systems of relevance for the less developed countries, and the implementation of typical documentation activities in specific environments or situations.

In first place however, it is hoped that resources will be available in order to initiate the production of a series of practical and simple handbooks to assist local staff in performing better the various documentation tasks within systems using the current version of BABINAT.

REFERENCES

[1] Saracevic, T., Braga, G., Quijano Solis, A. Information systems in Latin America. In: Williams, M., ed., Annual Review of Information Science and Technology, vol. 14 (1979), p. 249 ss.

[2] Menou, M.J. Mini- and micro-computers and the eradication of information poverty in the less developed countries. In Keren, C. & Perlmutter L., The application of mini- and micro-computers in information, documentation and ibraries, Amsterdam, North Holland, 1983, p. 363.

[3] Organisation des Nations Unies pour l'Alimentation et l'Agriculture. Maroc. Centre pour le rassemblement et l'analyse des données relatives aux projets de développement agricole et rural. Rapport sur les résultats, conclusions et recommandations du projet. Projet UNDP/FAO/MOR/68/526. Rome, FAO, mars 1971.

[4] Rósza, G. Information from claims to needs. Budapest, Kultura & Hungarian Academy of sciences, 1988, p. 188.

[5] Parker, J.S. Selling the UK library expertise abroad. Library Association Record, vol. 89, n. 1, p. 28.

[6] Molino, E.; Guadarrama, L. Micro-computers for information and documentation activities in developing countries. In: Keren, C. & Perlmutter, L., eds., ibid, p. 370.

[7] Lau, J. Will developing countries miss the information revolution too ? In Proceedings of the 11th International Online Information Meeting, Oxford, Learned Information, 1988, p. 515-516.

[8] Thorpe, P. The impact of new information technology in the developing countries. Journal of Information Science, vol. 8, n. 5 (1984), p. 213-220.

[9] Holt. B., ed. UNIMARC Manual. London, International Federation of Library Associations and Institutions, UBCIM Programme, 1987.

[10] Dierickx, H.; Hopkinson, A., eds. Reference manual for machine readable bibliographic description. 2nd revised edition. Paris, UNESCO, 1981.

[11] Food and Agriculture Organization of the United Nations. International information system for the agricultural sciences and technology. AGRIS Guidelines for bibliographic description and input sheet preparation (FAO/AGRIS-4 Rev. 2). Rome, FAO, 1979

[12] Simmons, F.; Hopkinson, A., eds. CCF. The Common Communication Format. 2nd Edition. Paris, UNESCO, 1988.

[13] Di Lauro, A. IDIN Manual for the creation and management of bibliographic data bases using Micro-ISIS. Paris, OECD. Development Centre, 1988.

[14] Centre de coopération internationale en recherche agronomique pour le développement (CIRAD), Institut français de recherche scientifique pour le développement en coopération (ORSTOM), Système d'information sur les pays en voie de développement (IBISCUS). BABINAT. Manuel de référence pour les bases de données bibliographiques nationales. Version 1.1. Montpellier (France), CIRAD, Janvier 1989.

DEVELOPMENT OF DESK TOP CATALOG SYSTEM FOR BOOKS

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Abstract

Desk Top Catalog System for Books is now developing. The system is composed of a 32-bits Personal Computer, the J-BISC (Japan Biblio Disc), a Magneto Optical Disk, and a Page printer. Using this system, making desk top catalog of books and utilizing this catalog is possible.

At first, bibliographic records from the J-BISC are retrieved and then some local data are added to them, if necessary. The records are down loaded to the Magneto Optical Disk. In this way, necessary bibliographic records with local data are collected. This is called the Desk Top Catalog of Books. Searching necessary book by this catalog is possible. Printing function of book catalog and card catalog is also available.

In this paper, this system is introduced.

First of all, each characteristic of these devices is described in detail. The ability of a Personal Computer which is equipping with 32-bits MPU, e.g. Intel 80386, is mentioned. A simple explanation on CD-ROM (Compact Disk Read Only Memory), which is one kind of optical disk, and whose storage capacity is about 500MB(Mega Bytes), is mentioned. J-BISC, which is a CD-ROM version of JAPAN/MARC (JAPAN/Machine Readable Catalog) is introduced. An explanation on Magneto Optical Disk, whose storage capacity is about 600MB, but which is readable, writable, and also erasable, is introduced. A simple explanation on a Page printer, e.g. a Laser shot, LC shutter, and LED printer, is mentioned.

And then the format of the down loaded bibliographic record from J-BISC is described in detail. A desirable format for easy programming is discussed.

Development of Desk Top Catalog System for Books

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1. Introduction

Japan/Machine Readable Catalog (JAPAN/MARC) 1) is a representative Catalog of Japan. It is weekly published on Magnetic Tape (MT) by the National Diet Library (NDL) of Japan since April 1982.

Compact Disk Read Only Memory (CD-ROM) JAPAN/MARC 2) is also published since April 1988. This is called Japan Biblio-Disc (J-BISC). Bibliographic records since January 1980 are contained in it. Adding new bibliographic records, it is quarterly renewed. J-BISC is developed for a personal computer.

In this paper, the format and code of bibliographic records on MT JAPAN/MARC and down-loaded from J-BISC are described 3),4). A Desk Top Catalog (DTC) System for Books using J-BISC is introduced 5).

Note: Bibliographic records down-loaded from J-BISC are simply called bibliographic records in J-BISC, in this paper.

2. Record Format and Code

2.1 MT JAPAN/MARC

The format and code of bibliographic records on MT JAPAN/MARC 1) are described. A bibliographic record is composed of a record label (24-byte), a directory (variable length), and repetition of data fields (variable length). A record is delimited by a record delimiter $(1D)_{16}$. One example is illustrated in Figure 1.

Note: $(\text{Number})_{16}$ denotes that the number is a hexadecimal number.

Figure 1 A bibliographic record on MT JAPAN/MARC

```
00994NAM  0600181 I 45
001000900000002000023000009100004200032251016100074265001900235270006700
2542750031003213500057003523600017004095510249004266850015006757510
10100690905002100791#
80016820#$A0021JP$B008180016820#$A035119821201 1980        ENG 1312
 #$A1122Oxford advanced learner's dict
ionary of current English.$F0362[By] A.
 S. Hornby.#$A01223d ed.#$A0122Tokyo,$B0222K
aitakusha,$D01421980.2.#$A01021036p$B008219
cm#$A0502日本語書名：オックスフォード現代英英辞典　縮刷版#$B0102
2100円#$A1102Oxford advanced learner's
dictionary of current English$X1142<Ox
ford advanced learner's dictionary
of current English>$B0062251#$A0082KS12
#$A0422Hornby, Albert Sydney.$X0462<Hornby,
Albert Sydney.>#$A0142KS12-58#
```

Note: Single and wave underline indicate a record label and a directory, respectively. Data fields are following. "#" and "$" denote a field delimiter $(1E)_{16}$ and a subfield indicator $(1F)_{16}$, respectively.

Both Extended Binary Coded Decimal Interchange Code (EBCDIC) and Japan Industrial Standard (JIS) C-6226 code (and C-6225 code for control) are used. EBCDIC is one-byte (eight-bit) code used to express a record label, a directory, and a subfield descriptor (Appendix Table A). It is used by IBM and most other mainframe computers. JIS C-6226 code is two-byte code used to express Japanese letters (Appendix Figure A).

Note: "Japanese letters" include Chinese letters used in Japan.

The pattern of a record label and an example are shown below.

XXXXXNAM__06YYYYY_I_45__ (e.g. 00994NAM 0600181 I 45)

where, XXXXX is record length,

YYYYY is top address of the first data field,

"_" denotes a blank.

Note: Expressing a number as fixed-digit, if the number is less than the fixed-digit, zeros are added if needed to make up that length. For example, expressing a number 994 as five-digit, it is expressed as 00994.

The directory is composed of repetition of entries (12-digit). This is delimited by a field delimiter $(1E)_{16}$.

The pattern of an entry and an example are shown below.
XXXYYYYZZZZZ (e.g. 001000900000, 020002300009)
where, XXX is a field identification number called tag.
YYYY is length of the data field.
ZZZZZ is top address of the data field.

Each data field is delimited by a field delimiter $(1E)_{16}$. The first data field (e.g. 80016820) is a record number (eight-digit). Others (e.g. \$A0021JP\$B008180016820) are composed of repetition of subfield descriptors (six-digit, e.g. \$A0021, \$B0081), and bibliographic data (variable length, e.g. JP, 80016820). Subfield descriptor is composed of subfield indicator $(1F)_{16}$, subfield name (one-letter, e.g. A, B), data length (three-digit, e.g. 002, 008), and data mode (one-digit, e.g. 1, 2). This is expressed by the number one or two. One or two indicates that the following bibliographic data is written by one-byte code or two-byte code, respectively. It is indispensable because some one-byte codes conflict with the first byte of two-byte codes.

2.2 CD-ROM JAPAN/MARC (J-BISC)

The format and code of bibliographic records in J-BISC 2) are described. These conforms to accepted those of Micro Soft Disk Operating System (MS-DOS). The detail structure of the format is not declared. In the reference 2), it is roughly stated. It is as follows: a bibliographic record is composed of items delimited by a CR-LF. One example is illustrated in Figure 2. Between a record and next record, one CR-LF is added.

Note: CR-LF is Carriage Return and Line Feed: $(0D)_{16}$ and $(0A)_{16}$, respectively.

Both JIS C-6220 code and Shift JIS code are used. JIS C-6220 code is one-byte code used to express alphabet and numeral instead of EBCDIC (Appendix Table B). And it is almost the same as American Standard Code for Information Interchange (ASCII) code. Shift JIS code is two-byte code used to express Japanese letters.

The first item (e.g. 00180016820) is tag (e.g. 001) and a record number (e.g. 80016820). Others (e.g. 020\$AJP\$B80016820) are composed of tag (e.g. 020) and repetition of subfield descriptor (two-letters, e.g. \$A, \$B) and bibliographic data (variable length, e.g. JP, 80016820). Subfield descriptor is composed of subfield indicator \$, and subfield name (one-letter, e.g. A, B).

Figure 2 A bibliographic record in J-BISC

```
00180016820↵
020$AJP$B80016820↵
100$A19821201 1980        ENG 1312    ↵
251$AOxford advanced learner' s dictionary of current
English. $F[By]  A.  S.  Hornby.↵
265$A3d ed.↵
270$ATokyo, $BKaitakusha. $D1980. 2.↵
275$A1036p$B19cm↵
350$A日本語書名：オックスフォード現代英英辞典    縮刷版↵
360$B2100円↵
551$AOxford advanced learner' s dictionary of current English$X <
Oxford advanced learner' s dictionary of current English> $B251↵
685$AKS12↵
751$AHornby, Albert Sydney. $X <Hornby, Albert Sydney. >↵
905$AKS12-58↵
```

Note: "↵" is CR-LF.

Start of record

A record starts at the next character of Beginning Of File (BOF), or the next one of two CR-LF.

End of record

J-BISC has no record delimiter like MT record. A record is delimited at the first CR-LF of two CR-LF, or last CR-LF followed by End of File (EOF).

2.3 Consideration

The cause of the difference arising between the format of MT and that of CD-ROM is as follows: magnetic memory media is low reliability when MT is developed. So check means are prepared on hardware and software: parity check and redundant structure format. But now, magnetic memory media is almost error free. So these exaggerated check means are not done anymore.

Media conversion from MT to a floppy disk is easy [3]. This conversion is useful for the MARCs not published by CD-ROM. Media conversion from a floppy disk to MT is also easy [4]. This is useful for the following case: the bibliographic records on MT have been dealing with by a mainframe computer, so it is desired to add bibliographic records in J-BISC onto the database in a mainframe computer.

3. Desk Top Catalog (DTC) System

DTC System for books using J-BISC has been constructing. This system is designed to use bibliographic records converted from MT to a floppy disk for copy cataloging at the first stage. But recently J-BISC is easily usable, so it has been already modified into the system using J-BISC (6).

3.1 Hardware configuration

To use J-BISC, a personal computer equipping one or more floppy disk drive, and a CD-ROM drive are requisite. J-BISC is available to an 8-bit personal computer. A 16-bit personal computer is mainly used. Recently a 32-bit personal computer becomes to use.

It is already prepared in our laboratory that the system consists of a 32-bit personal computer with a 20MB hard disk, Liquid Crystal Shutter Printer, and a 500MB Magneto Optical (MO) disk.

1) Personal computer

A personal computer is classified into an 8, 16, or 32-bit computer by its Micro Processing Unit (MPU). An 8-bit MPU is now mainly used for home game machine. Or it is built in various machines for controller. Now a 16-bit personal computer is mainly used. But it is frequently pointed out that it is insufficient on processing speed and on handling ability of memory. So a 32-bit personal computer is gaining popularity.

The specification of a personal computer made by NEC, which is prevailing in Japan, and its compatible machine made by EPSON is shown in Table 1. Both machines are now using in our laboratory.

Table 1 The specification of a personal computer

	NEC PC-9801RA	EPSON PC-386
MPU	Intel 80386(clock 16MHz)	← (clock 20MHz)
Memory ROM	96KB(BIOS, N88-BASIC)	96KB(BIOS)
RAM	1.6MB(max. 12.6MB)	1.6MB(max. 14.6MB)
VRAM	12KB(text), 256KB(graphic)	←
Display		
Text	80-column × 25-line	←
Graphic		
Color	640 × 400-dot(2-screen)	←
Mono	640 × 400-dot(8-screen)	←
Character	JIS-1, 2 (7,000-kinds)	←
Keyboard	JIS	←
Disk: floppy	1MB(640KB) 5.25inch × 2-drive	←
hard	20MB/40MB	0MB/20MB/40MB
Interface		
Mouse	bus mouse	←
Printer	8-bit parallel	←
Serial	RS-232C	←

2) Disk

Floppy disk is removable. Its memory size is rather small (ordinarily 1MB) and access time is long. So it is often used for exchanging data. Hard disk is not removable. Its memory size is big (at least 20MB) and access time is very short. So it is treated as one body with a personal computer. Recently, CD-ROM and MO disk are available to a personal computer. The specification of these disks is shown in Table 2 6)

Table 2 The specification of disks

	Floppy disk	Hard disk	CD-ROM	MO disk
Memory (MB)	0.64-12.5	10-330	540	211-326
Diameter (inch)	3.5, 5.25, 8	3.5, 5.25	5.25	5.25
Mean access time (ms)	79-300	20-100	0.5	70-150
Revolution speed (rpm)	300-360/3600	3000-3600	200-530	1800-3000
Transfer speed (Mbit/s)	0.5-14.3MB/s	1.5-12	1.2	5-7.5
Price Media (¥)	500-4500			30000
Drive (¥ × 1000)	60-160	90-1580	150	450-1300

3) CD-ROM

CD-ROM is the same outward form of music CD. It has many advantages: many duplication is made by low cost; the more it is made, the lower the price is; handling is easy; memory size is enough large; the data doesn't volatilize; access time is very short. Writing is impossible is often indicated to be a weak point. But this is remarkable advantage. Because tampering with the data is impossible. The specification of a CD-ROM drive is shown in table 3.

Table 3 The specification of a CD-ROM drive

	NEC PC-CD101
Media	5.25inch Compact Disk
Memory	540MB
Interface	SCSI(Small Computer System Interface)
Revolution speed	200-530rpm Constant Linear Velocity
Transfer speed	150KB/sec.
Seek time	0.5sec. (mean) 1.0sec. (max.)
Size	154(W) × 338(D) × 87(H) mm 3.5kg

4) MO disk

Magneto Optical disk, which can write and read data repeatedly, is put to practical use. This is an epoch making disk: mass storage, random access memory, removable like a floppy disk. The principle of this device is as follows: heating by strong laser beam spot makes change of magnet under magnetic field. It needs three path to write data onto the disk: erasing, writing, and verifying.

Though access time is longer than that of hard disk in the specification, it is not inferior to hard disk in practical use. The specification is shown in Table 4. This almost conforms to accepted the standard of International Organization for Standardization (ISO).

Table 4 The specification of a Magneto Optical disk (drive)

	SONY NWP-539
Media (accepted ISO)	Cartridge type 5.25inch MO disk
Memory	594MB(double side), 297MB(single side)
Interface	SCSI
Format(accepted ISO)	31sectors/track 512B/sector 18751tracks/side
Revolution speed	2400rpm Constant Angular Velocity
Mean waiting time	12.5msec.
Seek time	22msec. (±64 track) 90msec. (mean)
Transfer time	640KB/sec. (continuous) 1.2MB/sec. (burst)
Size	126(W) × 310(D) × 211(H) mm 6.5kg

5) Page printer

Page printer is classified into three types by the printer head: Laser Beam Printer, Liquid Crystal Shutter Printer, Light Emitting Diode Printer. Except printer head, these machines are almost the same as a copy machine. The quality of printed letter by these printers is almost the same. The figure of Japanese letters is generally more complex than that of alphabet. So to print out clear Japanese letters, much effort has been made. One is increasing the dots of matrix printer head. Even the lowest quality, a 16 × 16-dot matrix is need. Now a 24 × 24-dot matrix printer is popular. This paper is written with Liquid Crystal Shutter Printer. This is a 32 × 32-dot matrix printer. The specification is shown in Table 5. Recently a 48 × 48-dot matrix printer appears. So the quality is almost as same as type face.

Note: A letter on a display generally consists of a 16 × 16-dot matrix.

Table 5 The specification of a page printer

	CASIO LCS-240W Type 60A
Method	Liquid Crystal Shutter
Print Resolution Print speed (A4) Warm up time First page print time	240-dpi 9-sheet/min. max. 100sec. max. 15sec.
Paper Size: Kinds: Cassette Unit price (A4)	cut sheet: B4, B5, A4, A5 ¥ 5.9
Control CPU: RAM Including font User character Character code Graphics command Emulate	8086: 1MB nothing 199characters JIS C-6226 (1987) original NEC PC-PR201H
Font Cartridge: Slots: Kinds	2-slot: 32×32, 24×24 -dot font
Interface	8-bit parallel
Power Size Noise Price	max. 785 W 475(W)×420(D)×340(H) mm 32kg 50 dB ¥ 598000

3.2 Software configuration

A program is supported with J-BISC (Figure 3). The typical way to use J-BISC is as follows: the book is retrieved and the bibliographic record is got, local data is added on to the bibliographic record if necessary, then the bibliographic record with the added local data is down-loaded and/or is printed out.

Figure 3 Software configuration in J-BISC

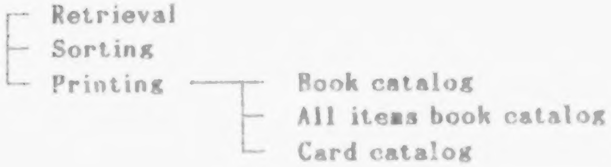
- Retrieval
- Down-loading
- Printing
  - List of books
  - List of all items
  - Card catalog

Here are prepared three print forms. One is list of retrieved books. Another is a card with local data. The other is list of all items of a bibliographic record. But the features to retrieve and to print out are not enough for DTC System because they are effective restricted to the bibliographic records in J-BISC.

The way to use DTC System being developed in our laboratory is planned as follows: at first stage, database of bibliographic records of holding books is made in the disk: the book is retrieved and the bibliographic record is got, local data is added on to the bibliographic record if necessary, then the bibliographic record with the added local data is down-loaded. At the second stage, the bibliographic records in the disk is processed and/or used: retrieval; sorting; printing out card catalog, book catalog, and all items book catalog (Figure 4).

The programs to print out bibliographic records in the disk has been already developed in our laboratory.

Figure 4 Additional software configuration



3.3 Experimental results

One-byte character and two-byte character are used to write bibliographic data, so this imposes us much effort to make programs. Printing out all items book catalog is proposed.

1) Print of book catalog

There rise following problems on printing out Japanese letters.

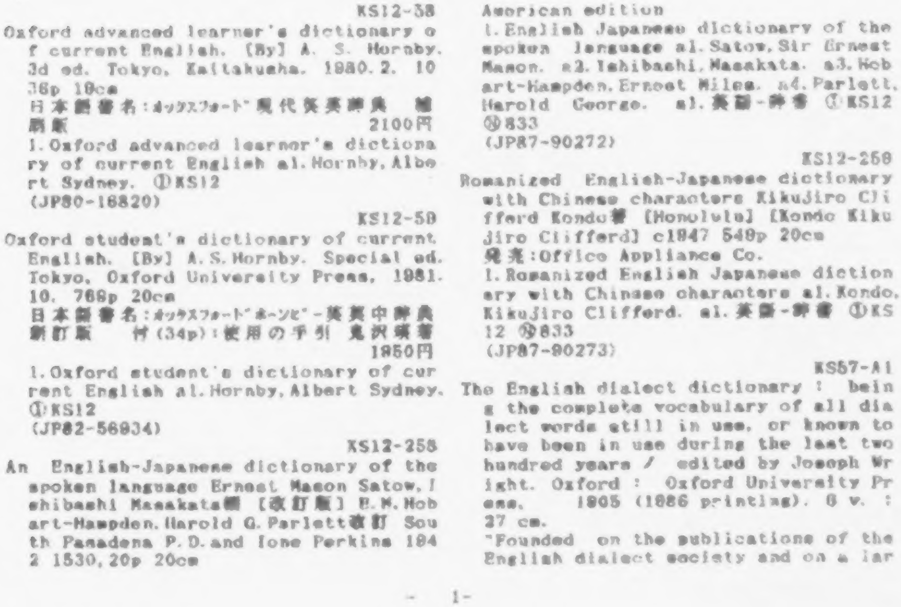
There has been a rule: if the top letter of a line is punctuation mark, right parenthesis, or hyphen, this character is moved to the last of a preceding line. Two characters must be added to this rule: "dakuten" and "handakuten" (these are the second character of these ﾊﾞ, ﾊﾟ, respectively).

The last of lines is not aligned.

Furthermore, applying times of that rule to one line must be decided. Aligning is done only when letters in a line is over some number. This number must be decided.

In this system, applying time is decided to be one and that number is decided to be regulation number of letters in a line minus two. The printed book catalog is shown in Figure 5.

Figure 5 Book catalog



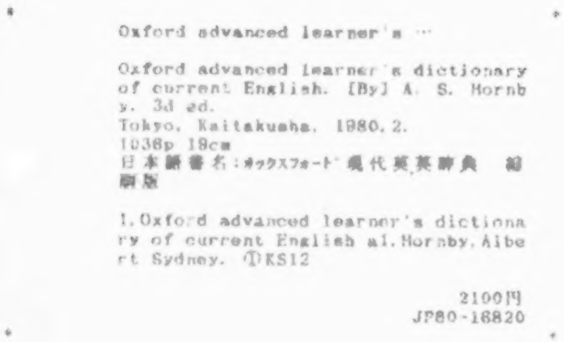
```
                                  KS12-38     American edition
Oxford advanced learner's dictionary o        1.English Japanese dictionary of the
  f current English. [By] A. S. Hornby.       spoken  language a1.Satow,Sir Ernest
  3d ed. Tokyo, Kaitakusha. 1980.2. 10        Mason. a2.Ishibashi,Masakata. a3.Hob
  36p 19cm                                    art-Hampden,Ernest Miles. a4.Parlett,
  日本語書名:オックスフォード現代英英辞典  増        Harold  George.  a1.英語-辞書 ①KS12
  補版                          2100円        Ⓝ833
  1.Oxford advanced learner's dictiona        (JP87-90272)
  ry of current English a1.Hornby,Albe                                    KS12-260
  rt Sydney. ①KS12                          Romanized  English-Japanese dictionary
  (JP80-16820)                                with Chinese characters KikuJiro Cli
                                  KS12-50     fford Kondo著 [Honolulu] [Kondo Kiku
Oxford student's dictionary of current        Jiro Clifford] c1947 549p 20cm
  English. [By] A.S.Hornby. Special ed.       発売:Office Appliance Co.
  Tokyo, Oxford University Press, 1981.       1.Romanized English Japanese diction
  10. 769p 20cm                               ary with Chinese characters a1.Kondo,
  日本語書名:オックスフォードホーンビー英英中辞典        KikuJiro Clifford. a1.英語-辞書 ①KS
  新訂版    付(34p):使用の手引 鬼沢[illegible]著        12 Ⓝ833
                                  1950円      (JP87-90273)
  1.Oxford student's dictionary of cur                                    KS57-A1
  rent English a1.Hornby,Albert Sydney.     The English dialect dictionary :  bein
  ①KS12                                       g the complete vocabulary of all dia
  (JP82-56934)                                lect words still in use, or known to
                                  KS12-258    have been in use during the last two
An  English-Japanese dictionary of the        hundred years /  edited by Joseph Wr
  spoken language Ernest Mason Satow,I        ight. Oxford :  Oxford University Pr
  shibashi Masakata編 [改訂版] E.M.Hob        ess,    1905 (1986 printing). 6 v. :
  art-Hampden,Harold G.Parlett改訂 Sou        27 cm.
  th Pasadena P.D.and Ione Perkins 194        "Founded  on the publications of the
  2 1530,20p 20cm                             English dialect society and on a lar

                                 - 1-
```

2) Print of card catalog

A card has a heading. When the heading is long, it sometimes happens that one word vanishes in the middle of it. So the following elimination method is proposed: scanning the letter strings from right side, and looking for the first blank that is in the regulation number of letters in a line, the letters following it are eliminated. A card is shown in Figure 6.

Figure 6 Card catalog



```
Oxford advanced learner's …

Oxford advanced learner's dictionary
of current English. [By] A. S. Hornb
y. 3d ed.
Tokyo, Kaitakusha, 1980.2.
1036p 18cm
日本語書名：ｵｯｸｽﾌｫｰﾄﾞ現代英英辞典　縮
刷版

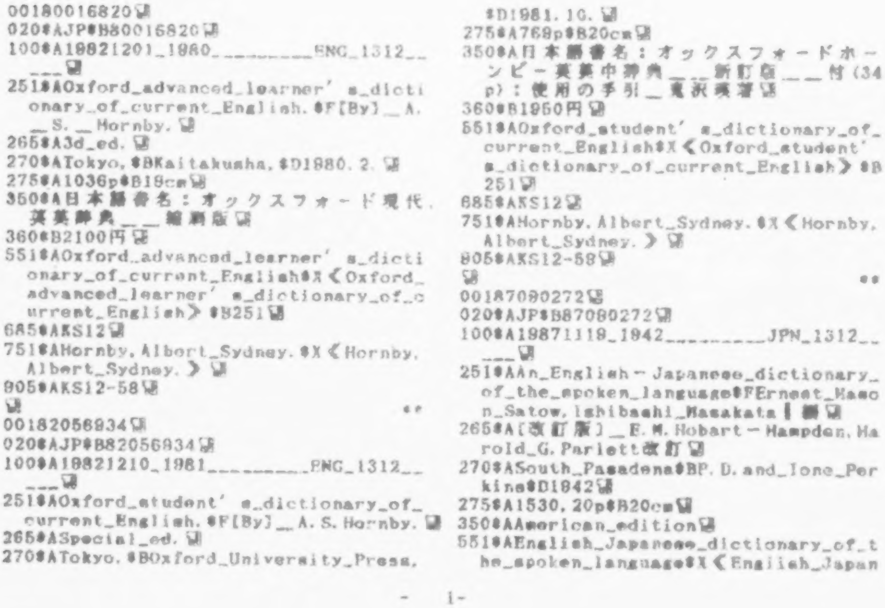
1.Oxford advanced learner's dictiona
ry of current English a1.Hornby,Albe
rt Sydney. ①KS12

                                2100円
                           JP80-16820
```

3) Print of all items book catalog

A program to print out all items book catalog is developed. In this catalog, blank and CR-LF is converted into _ and ↲, respectively (Figure 7).

Figure 7 All items book catalog



```
00180016820↲
020$AJP$B80016820↲
100$A19821201_1980_________ENG_1312__
  ___↲
251$AOxford_advanced_learner' s_dicti
  onary_of_current_English.$F[By]_A.
  _S._Hornby.↲
265$A3d_ed.↲
270$ATokyo,$BKaitakusha,$D1980.2.↲
275$A1036p$B18cm↲
350$A日本語書名：オックスフォード現代.
  英英辞典＿＿縮刷版↲
360$B2100円↲
551$AOxford_advanced_learner' s_dicti
  onary_of_current_English$X《Oxford_
  advanced_learner' s_dictionary_of_c
  urrent_English》$B251↲
685$AKS12↲
751$AHornby,Albert_Sydney.$X《Hornby,
  Albert_Sydney.》↲
805$AKS12-58↲
↲                                   **
00182056834↲
020$AJP$B82056834↲
100$A19821210_1981_________ENG_1312__
  ___↲
251$AOxford_student' s_dictionary_of_
  current_English.$F[By]_A.S.Hornby.↲
265$ASpecial_ed.↲
270$ATokyo.$BOxford_University_Press,
  $D1981.10.↲
275$A768p$B20cm↲
350$A日本語書名：オックスフォードホー
  ンビー英英中辞典＿＿新訂版＿＿付(34
  p)：使用の手引＿[illegible]著↲
360$B1950円↲
551$AOxford_student' s_dictionary_of_
  current_English$X《Oxford_student'
  s_dictionary_of_current_English》$B
  251↲
685$AKS12↲
751$AHornby,Albert_Sydney.$X《Hornby,
  Albert_Sydney.》↲
805$AKS12-58↲
↲                                   **
00187080272↲
020$AJP$B87080272↲
100$A19871118_1942_________JPN_1312__
  ___↲
251$AAn_English－Japanese_dictionary_
  of_the_spoken_language$FErnest_Maso
  n_Satow,Ishibashi_Masakata共編↲
265$A[改訂版]_E.M.Hobart－Hampden,Ha
  rold_G.Parlett改訂↲
270$ASouth_Pasadena$BP.D.and_Ione_Per
  kins$D1842↲
275$A1530,20p$B20cm↲
350$AAmerican_edition↲
551$AEnglish_Japanese_dictionary_of_t
  he_spoken_language$X《English_Japan

                    - 1 -
```

3.4 Consideration

Printing out down-loaded bibliographic records has been described. The matter pointed out might be small, but the same type problem must rise where a letter is made by two or more characters. Printing out all items book catalog is proposed.

If the format of bibliographic records in J-BISC were as follows, programming becomes very easy:

the first item,

tag + record number

others,

tag + subfield indicator + subfield name + bibliographic data

Note: Where + means concatenation.

For example,

```
00180016820 ↵
020$AJP ↵
020$B80016820 ↵
   ⋮
251$AOxford advanced learner' s dictionary of current English. ↵
251$F[By]  A.  S.  Hornby. ↵
```

Furthermore,

each item is enclosed with quotation marks and is put side by side delimited with a comma. A record is delimited by a CR-LF.

For example,

```
"00180016820", "020$AJP", "020$B80016820", "100$A19821201 1980
ENG 1312     ",  … ,"251$AOxford advanced learner' s dictionary of
current English.", "251$F[By]  A.  S.  Hornby.",  …  ↵.
```

In this case, tag + record number and tag + subfield indicator + subfield name are called tag.

In this paper, algorithm for hyphenation is not referred. This subject is easily solved restricting in English. But it is very difficult for an algorithm to cope with various languages.

The program for retrieval and sorting is now developing. There are some problems resulted from the restriction of MS-DOS; only 64KB memory can be handled at a time. But these problems will be solved in a few years by appearance of new DOS.

4. Conclusion

The format and code of MT JAPAN/MARC and CD-ROM JAPAN/MARC has been described. Desk Top Catalog System for books by using a personal computer and the newest devices is introduced. In the near future, local bibliographic records control is done by using a personal computer, and every library will be able to publish its holding book catalog on CD-ROM, a MO disk, or a Write Once Read Many (WORM) Optical disk.

References

1) Japan Library Association, "JAPAN/MARC Manual", 3rd edition, P. 77, Japan Library Association, Tokyo (1988).

2) Japan Library Association, "J-BISC User's Manual", 1st edition, P. 152, Japan Library Association, Tokyo (1988).

3) Asakura, Shuzo, "Experiments on Utilization of JAPAN/MARC by a Personal Computer", JOHO KANRI, Vol. 29, No. 11, pp. 939-950 (Feb. 1987).

4) Asakura, Shuzo, "Conversion of record format and code scheme: from J-BISC to JAPAN/MARC tape", The Library Journal, Vol. 83, No. 1 (Jan. 1989).

5) Asakura, Shuzo, "Printing out bibliographic records on J-BISC", The Library Journal, Vol. 83, No. 1 (Jan. 1989).

6) Shizuki, Takafumi et al., "Themes", Nikkei Byte, No. 57, pp. 141-171 (Apr. 1989).

Appendix Tables

Table A EBCDIC

	Upper 4 bits															
Lower 4 bits	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0					SP	&	-			ｿ						0
1							/		ｱ	ﾀ			A	J		1
2									ｲ	ﾁ	ﾍ		B	K	S	2
3									ｳ	ﾂ	ﾎ		C	L	T	3
4									ｴ	ﾃ	ﾏ		D	M	U	4
5									ｵ	ﾄ	ﾐ		E	N	V	5
6									ｶ	ﾅ	ﾑ		F	O	W	6
7									ｷ	ﾆ	ﾒ		G	P	X	7
8									ｸ	ﾇ	ﾓ		H	Q	Y	8
9									ｹ	ﾈ	ﾔ		I	R	Z	9
A					~	!	^	:	ｺ	ﾉ	ﾕ	ﾚ				
B					.	¥	,	#				ﾛ				
C					<	*	%	@	ｻ		ﾖ	ﾜ				
D					(	)	-	'	ｼ	ﾊ	ﾗ	ﾝ				
E					+	;	>	=	ｽ	ﾋ	ﾘ	ﾞ				
F					¦		?	"	ｾ	ﾌ	ﾙ	ﾟ				

Table B JIS C-6220 code

	Upper 4 bits															
Lower 4 bits	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			SP	0	@	P		p			SP	ｰ	ﾀ	ﾐ		
1		DC	!	1	A	Q	a	q			｡	ｱ	ﾁ	ﾑ		
2			"	2	B	R	b	r			｢	ｲ	ﾂ	ﾒ		
3		DC	#	3	C	S	c	s			｣	ｳ	ﾃ	ﾓ		
4			$	4	D	T	d	t			､	ｴ	ﾄ	ﾔ		
5			%	5	E	U	e	u			･	ｵ	ﾅ	ﾕ		
6			&	6	F	V	f	v			ｦ	ｶ	ﾆ	ﾖ		
7			'	7	G	W	g	w			ｧ	ｷ	ﾇ	ﾗ		
8		CN	(	8	H	X	h	x			ｨ	ｸ	ﾈ	ﾘ		
9	HT		)	9	I	Y	i	y			ｩ	ｹ	ﾉ	ﾙ		
A	LF		*	:	J	Z	j	z			ｪ	ｺ	ﾊ	ﾚ		
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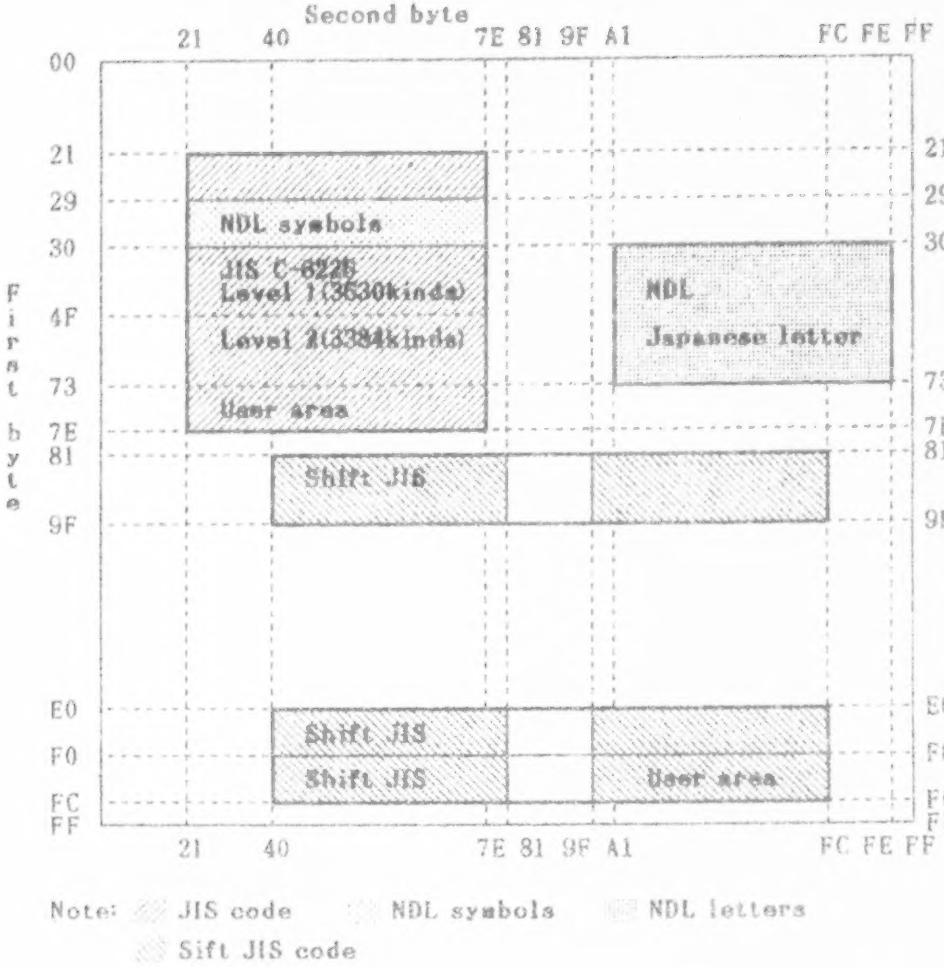
Appendix Figure

Figure A JIS C-6226 code


Second byte
21 40 7E 81 9F A1 FC FE FF
First byte
00
21
29
30
4F
73
7E
81
9F
E0
F0
FC
FF
NDL symbols
JIS C-6226
Level 1(3530kinds)
Level 2(3384kinds)
User area
NDL
Japanese letter
Shift JIS
Shift JIS
Shift JIS
User area
Note: ▨ JIS code ▨ NDL symbols ▨ NDL letters
▨ Sift JIS code

PRACTICAL CONSTRUCTION OF A THESAURUS

THE IFIC EXPERIENCE

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Abstract

The International Ferrocement Information Center (IFIC) serves as a clearing house of information on ferrocement and related construction materials. To provide an efficient and most appropriate dissemination in these materials, IFIC maintains a bibliographic database. From these records, IFIC provides computerized bibliographic search services for requests on particular aspects of ferrocement technology and related materials. The Ferrocement Thesaurus contains the authorized subject terms by which the documents in the databases are included and retrieved. It comprises of two parts: Part I Hierarchical listing and Part II Access Vocabulary. The listing contains 1061 postable terms and 249 nonpostable terms. The access vocabulary contains postable terms, nonpostable terms, pseudo terms and other entry terms to provide multiple access to the thesaurus. The IFIC experience in the development of this thesaurus is presented.

PRACTICAL CONSTRUCTION OF A THESAURUS
THE IFIC EXPERIENCE

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Asian Institute of Technology
Bangkok, Thailand

Ariston G. Trinidad
Mindanao State University
Marawi City, Philippines

The International Ferrocement Information Center (IFIC) serves as a clearing house of information on ferrocement and related construction materials. To provide an efficient and most appropriate dissemination in these materials, IFIC maintains a bibliographic database. The *Ferrocement Thesaurus* was developed to help users get access to these information. The IFIC experience in the development of this thesaurus is presented.

INTRODUCTION

The International Ferrocement Information Center (IFIC) serves as a clearing house for information on ferrocement and related materials.

Ferrocement is a highly versatile form of reinforced concrete, constructed of hydraulic cement mortar reinforced with closely spaced layers of continuous and relatively small diameter wire mesh. Ferrocement primarily differs from conventional reinforced or prestressed concrete by the manner in which the reinforcing elements are dispersed and arranged. As such, there are terminologies unique to ferrocement.

All information collected by IFIC are entered into a computerized database using UNESCO'S Computerized Documentation Service/ Integrated Set of Information Systems (CDS/ISIS). IFIC databases contain over 3500 records and these are expanding at the rate of 300 records per year. Each record contains author, title, source, abstract and keywords as primary information and availability, date, language and type of publications as secondary information. From these records, IFIC provides computerized bibliographic search services for requests on particular aspects of ferrocement technology and related materials. The *Ferrocement Thesaurus* is the key to the subject matter of these documents and a tool to achieve a unity of indexing terminology.

THE FERROCEMENT THESAURUS

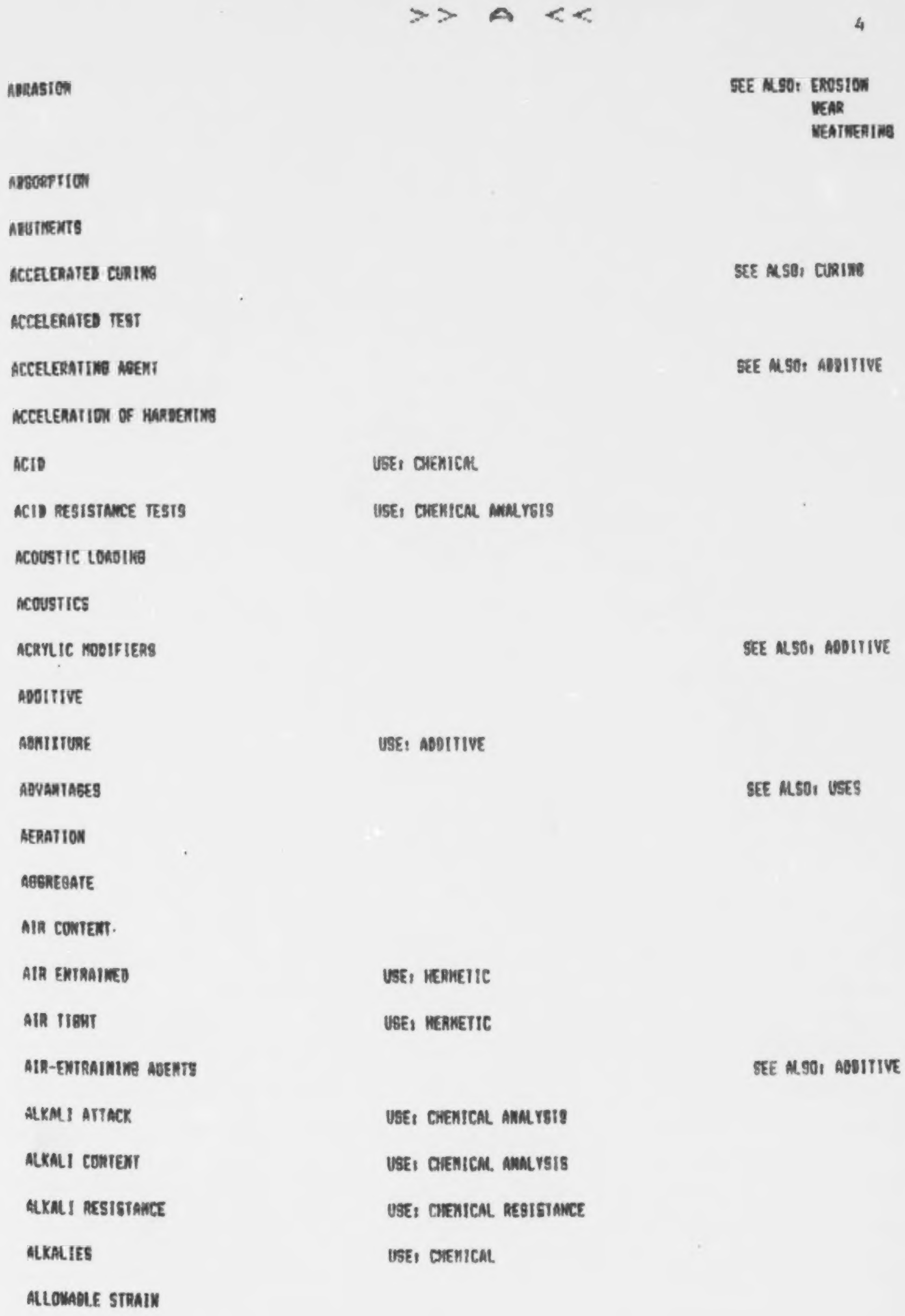
Ferrocement Thesaurus contains the authorized subject terms by which the documents in the databases are included and retrieved. It comprises of two parts: Part I Hierarchical Listing and Part II Access Vocabulary. The hierarchical listing contains all subject terms and cross references currently considered for use. The listing contains 1061 postable terms and 249 nonpostable terms. The access vocabulary contains postable terms, nonpostable terms, pseudoterms and other entry terms to provide multiple access to the thesaurus. The access vocabulary contains 2248 word headings.

Acquisition and Development of Database

IFIC started as early as 1977 to compile terms unique in ferrocement technology. IFIC used the empirical or inductive approach. Terms occuring in the field were collected from various sources and a relation of terms was only formed if it appeared useful. At this point, collection was only based from terms in the literatures available at IFIC. The information scientists at IFIC would go through the abstract and conclusion of the references, recording words and phrases that seem important in describing ferrocement. Collecting terms manually was tedious and time-consuming.

In 1980, IFIC created a computerized database using CDS/ISIS software from UNESCO. The *Ferrocement Keywords* was used to index the documents. IFIC provided literature search service for users and these searches indicated subject interest of users, a rich source of terminology. These terminologies were added in the keyword list. This list was printed as an internal document entitled *"Ferrocement Keywords"* (Fig.1). "Listado de Terminos Sobre Ferrocemento", the Spanish translation, was published by the Centro de Informacion Tecnica, Cuba in 1988.

In 1987, IFIC decided to upgrade its list of keywords into a thesaurus on ferrocement. IFIC staff reviewed a number of existing thesaurus and decided to use selected terms from the NASA Thesaurus 1985 Edition [1] and the 1967 Thesaurus of Engineering and Scientific Terms [2]. Terms in the literature on ferrocement and related construction materials. The main objective is to provide the 'right



>> A <<

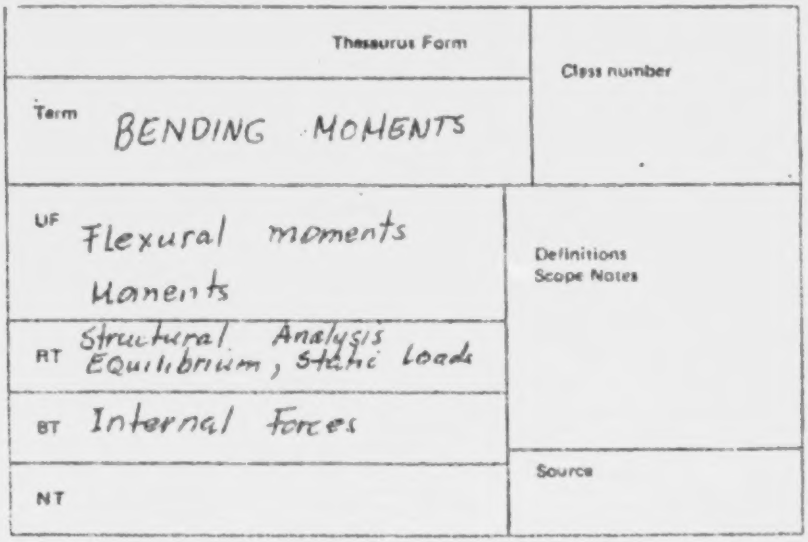
4

ABRASION		SEE ALSO: EROSION WEAR WEATHERING
ABSORPTION		
ABUTMENTS		
ACCELERATED CURING		SEE ALSO: CURING
ACCELERATED TEST		
ACCELERATING AGENT		SEE ALSO: ADDITIVE
ACCELERATION OF HARDENING		
ACID	USE: CHEMICAL	
ACID RESISTANCE TESTS	USE: CHEMICAL ANALYSIS	
ACOUSTIC LOADING		
ACOUSTICS		
ACRYLIC MODIFIERS		SEE ALSO: ADDITIVE
ADDITIVE		
ADMIXTURE	USE: ADDITIVE	
ADVANTAGES		SEE ALSO: USES
AERATION		
AGGREGATE		
AIR CONTENT		
AIR ENTRAINED	USE: HERMETIC	
AIR TIGHT	USE: HERMETIC	
AIR-ENTRAINING AGENTS		SEE ALSO: ADDITIVE
ALKALI ATTACK	USE: CHEMICAL ANALYSIS	
ALKALI CONTENT	USE: CHEMICAL ANALYSIS	
ALKALI RESISTANCE	USE: CHEMICAL RESISTANCE	
ALKALIES	USE: CHEMICAL	
ALLOWABLE STRAIN		

Fig. 1 A page from "Ferrocement Keywords"

word' for the author, the editor, the indexer, the abstactor and the user of information.

The selected terms were entered into a thesaurus card (Fig. 2). The card is made out in duplicate so that one copy is filed under each subject group and another is kept in alphabetical order. Information about the term and its relationship was gradually added to the thesaurus card during the compilation process [3].



Thesaurus Form		Class number
Term	BENDING MOMENTS	
UF	Flexural moments Moments	Definitions Scope Notes
RT	Structural Analysis Equilibrium, Static Loads	
BT	Internal Forces	
NT		Source

Fig. 2 Thesaurus Form

When subject terms have more than one meaning or where distinction between terms must be made clarification is provided in the following ways:

- parenthetical qualifying expressions or glosses are added, becoming part of the subject term.

Example: Mortars (material) term.

- parenthetical scope notes (SN) are also added for explanation or definition. They do not become part of the subject term.

Example: SN (Excludes foundation members and substructures)

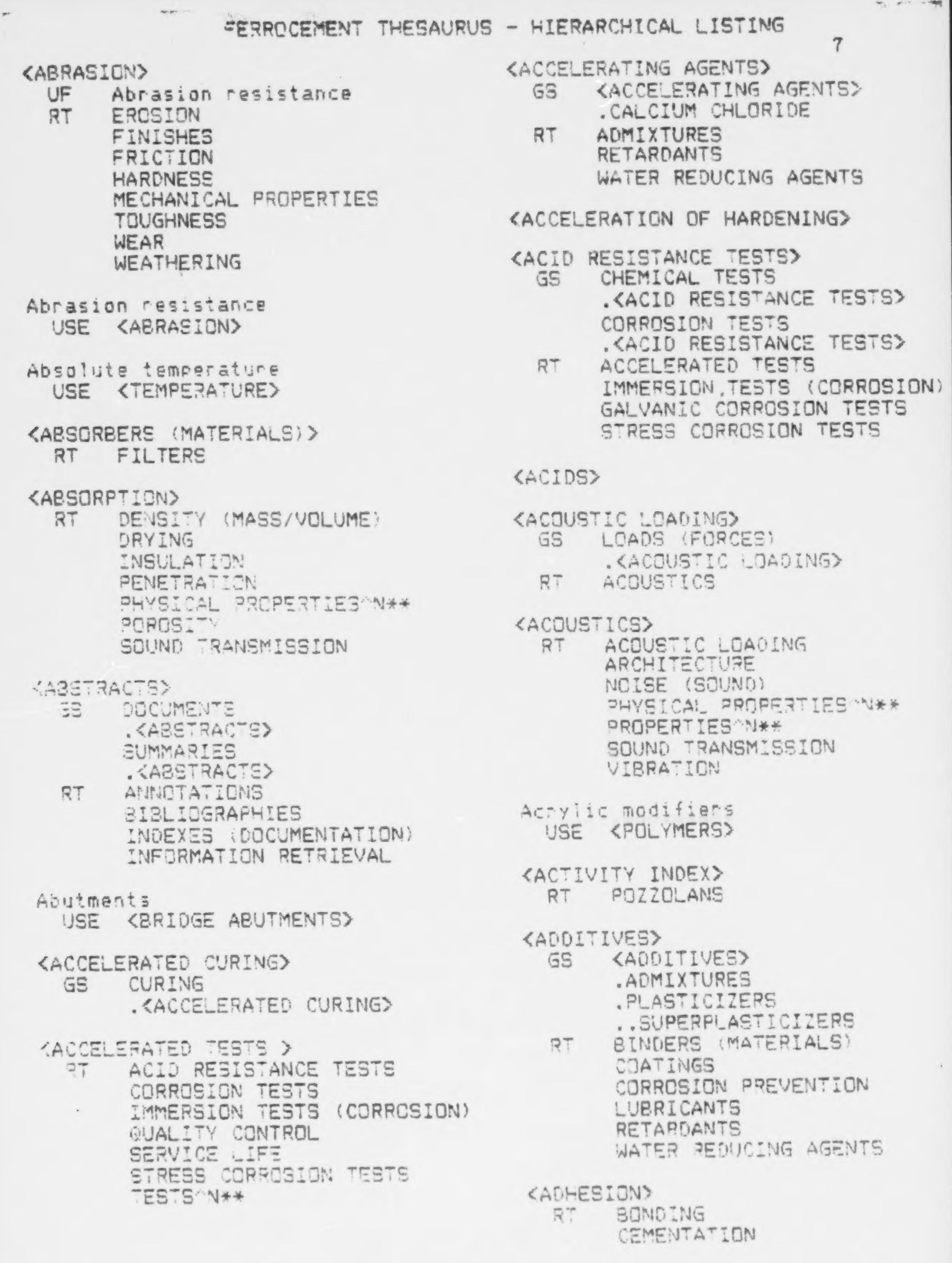
In general subject term are presented in the noun and plural form. The singular form, however, is occasionally used for specific processes, properties, conditions and hardwares.

Organizing Terms

Cross reference relationships in the hierarchical listing is as follows:

Cross reference	Notation
Broader Term	GS
Narrower Term	GS
Related Term	RT
Use	USE
Used for	UF

The Broader Term indicates that the term represents more inclusive concepts. In the Generic Structure (GS), the Broader Terms appear above and to the left of the term referenced. The Narrower Term indicates that the term



FERROCEMENT THESAURUS - HIERARCHICAL LISTING

7

<ABRASION>
UF Abrasion resistance
RT EROSION
FINISHES
FRICTION
HARDNESS
MECHANICAL PROPERTIES
TOUGHNESS
WEAR
WEATHERING

Abrasion resistance
USE <ABRASION>

Absolute temperature
USE <TEMPERATURE>

<ABSORBERS (MATERIALS)>
RT FILTERS

<ABSORPTION>
RT DENSITY (MASS/VOLUME)
DRYING
INSULATION
PENETRATION
PHYSICAL PROPERTIES^N**
POROSITY
SOUND TRANSMISSION

<ABSTRACTS>
GS DOCUMENTS
.<ABSTRACTS>
SUMMARIES
.<ABSTRACTS>
RT ANNOTATIONS
BIBLIOGRAPHIES
INDEXES (DOCUMENTATION)
INFORMATION RETRIEVAL

Abutments
USE <BRIDGE ABUTMENTS>

<ACCELERATED CURING>
GS CURING
.<ACCELERATED CURING>

<ACCELERATED TESTS >
RT ACID RESISTANCE TESTS
CORROSION TESTS
IMMERSION TESTS (CORROSION)
QUALITY CONTROL
SERVICE LIFE
STRESS CORROSION TESTS
TESTS^N**

<ACCELERATING AGENTS>
GS <ACCELERATING AGENTS>
.CALCIUM CHLORIDE
RT ADMIXTURES
RETARDANTS
WATER REDUCING AGENTS

<ACCELERATION OF HARDENING>

<ACID RESISTANCE TESTS>
GS CHEMICAL TESTS
.<ACID RESISTANCE TESTS>
CORROSION TESTS
.<ACID RESISTANCE TESTS>
RT ACCELERATED TESTS
IMMERSION TESTS (CORROSION)
GALVANIC CORROSION TESTS
STRESS CORROSION TESTS

<ACIDS>

<ACOUSTIC LOADING>
GS LOADS (FORCES)
.<ACOUSTIC LOADING>
RT ACOUSTICS

<ACOUSTICS>
RT ACOUSTIC LOADING
ARCHITECTURE
NOISE (SOUND)
PHYSICAL PROPERTIES^N**
PROPERTIES^N**
SOUND TRANSMISSION
VIBRATION

Acrylic modifiers
USE <POLYMERS>

<ACTIVITY INDEX>
RT POZZOLANS

<ADDITIVES>
GS <ADDITIVES>
.ADMIXTURES
.PLASTICIZERS
..SUPERPLASTICIZERS
RT BINDERS (MATERIALS)
COATINGS
CORROSION PREVENTION
LUBRICANTS
RETARDANTS
WATER REDUCING AGENTS

<ADHESION>
RT BONDING
CEMENTATION

Fig. 3 A sample page from "Ferrocement Thesaurus"

represents more specific concepts. In the Generic Structure (GS), the Narrower Terms appear below and to the right (indented) of the term referenced. The Related terms (RT) indicates that the two terms are closely related conceptually but are not structured within the broader or narrower hierarchy. The reference indicates that the term is not 'postable' (approved for use in indexing) and that the following term or terms should be used instead. Used for (UF) is a reciprocal of the USE cross reference and identifies valid or postable terms.

The cards were grouped in the same category. Once the categories have been identified the next step was to organize each into hierarchies. (Fig.3).

CONCLUSION

The *Ferrocement Thesaurus* will be updated to accommodate topics not previously encountered. This means developing existing hierachies in more detail, thus making the vocabulary increasingly specific. The rate of growth of the vocabulary will depend on the number of documents indexed; the depth of indexing and the specificity of the thesaurus. Terms which are rarely used may be reduced in status from full index terms and a reference made from them to the nearest broader terms.

The *Ferrocement Thesaurus* is on development process and further refinements still need to be done.

REFERENCES

1. United States, National Aeronautics and Space Administration. 1985. NASA Thesaurus. Washington: National Aeronautics and Space Administration.

2. Office of Naval Research, Project LEX and Engineers Joint Council. 1967: Thesaurus of Engineering and Scientific Terms.

3. Aitchison, J., and Gilchrist, A. 1985. Thesaurus Construction: A Practical Manual. London: ASLIB.

MALAYSIAN OFFICIAL PUBLISHING :
BIBLIOGRAPHIC CONTROL AND DISCRIPTION STANDARDS

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Abstract

Bibliographic control is predicated upon information gathering and collection building. It is aided by legislation and determined by library policies and resources. These processes in turn are influenced by such factors as information demands and a sense of national pride.

Malaysia's colonial history has meant that significant information and collections of early official publications reside elsewhere. In later years, with the advent of local legal deposit legislation, the responsibility for their bibliographic control has shifted back to institutions in the country. Various bibliographic tools have been produced to support use of these collections. The paper indicates the success, shortcomings and problems of various aspects of bibliographic control.

The post-Independence period has seen the expansion of the official administrative machinery and its extension into much socio-economic activity. Current official publications have assumed an importance not encountered before; and intensified their interest for a wide variety of information users. A need for useful and efficient bibliographic description of such materials has become imperative.

Conventional methods for handling official publications have not always proved to be entirely satisfactory for the organisation and information retrieval of such publications. Recent years have seen experiments in computer management of such collections even by relatively small libraries. The paper traces computerisation efforts by various types of libraries: national, academic, public and research libraries. It describes a current experiment at the University of Malaya Library which is attempting to manage, monitor and retrieve information from a special Malaysian official publications collection, using a combination of the CDS/ISIS package gifted by Unesco; and an inhouse software package programmed in dBase.

MALAYSIAN OFFICIAL PUBLISHING: BIBLIOGRAPHIC CONTROL AND DESCRIPTION STANDARDS

KHOO Siew Mun
Chief Librarian, University of Malaya

I. INTRODUCTION

Bibliographic control (BC) found early expression in conscious attempts by libraries to collect written materials comprehensively, or within certain specified parameters; and in efforts to describe such collections by way of listings and catalogues. Legislations establishing depository libraries and prescribing their responsibilities have enhanced BC within national boundaries. The early 1970s saw a consolidation of professional thinking and practice of BC in a world context. The works of D. Anderson, M. Line and others enunciated a formalised structure for action, and universal bibliographic control (UBC) was linked to the felt need and objective for universal availability of publications (UAP). Institutions such as IFLA and Unesco have actively promoted and supported efforts towards these ends (see Anderson 1986; Unesco 1982 etc.). As used in contemporary professional literature, BC may take one or more of the following connotations.

(i) **Acquisition control** over physical items of publications by a specified national institution, and/or by various institutions within a nation, which in cooperation with regional and international organizations contribute towards realizing UBC.

(ii) **Information control**, with the objective of drawing information from collections of physical units for better user access. Bibliographic description, application of standards for better exchanges of information, application of appropriate organizational procedures and technical methods are some considerations within this aspect of BC.

(iii) **Management control** of the collection, with the objective of obtaining information about the collection, in order to support decision-making.

The sections following examine these aspects of BC within Malaysia, in relation to Malaysian official publishing.

II. ACQUISITION CONTROL

Effective acquisitions control is predicated upon knowing what has been published; who the publishers are; and from whom the publications may be obtained. In countries where legal deposit exists, an additional tool is given to depositories to better effect BC.

In bibliographically developed countries the casual user and the serious collector of government publications can depend on infrastructures which were deliberately established to publish, publicize and disseminate such publications. Thus those wishing to check older materials of the United States need merely to refer to the *Checklist of United States Public Documents 1789-1976* (which updated the *1909 Checklist*.) Through various authoritative and comprehensive listings and indexes issued by agencies such as the Library of Congress, the Congressional Information Service (CIS), the American National Technical Information Service (NTIS) besides the USGPO's *Monthly Catalog of United States Government Publications*, users are able to obtain regular and current information on official publishing. A similar situation prevails in Britain, where the sterling publishing activities of both public and private sector presses, such as that of the HMSO, the British Library, and

Chadwyck-Healey amongst others, have also ensured comprehensive, current and retrospective BC of the main body of official publishing. Updated information, as in the HMSO *Daily List* and in the *House of Commons Weekly Information Bulletin* are available from a variety of sources. (See e.g. Whitehall & Westminster 1984, for descriptions of sources). With the advent of computerisation, many of these agencies have faced the responsibility of providing information even more efficiently than ever to their users. In terms of currency, this has often moved from a weekly, monthly or daily basis to online access. Access to massive databases are being made available; as well as those of smaller selective databases. With these advances, libraries and their users world-wide may be able to access such information, as they take the diskette format or may be made available on CD-ROM. Given below are two of many such examples.

> (a) **HMSO database online.** The HMSO database of UK government publications is publicly available online at long last.... The initial file is an impressive retrospective source with details of 120,000 titles and it is updated with new titles monthly.... The online file can be searched in a variety of ways including by name of official body and of author or chairman, series number, year of publication and date of entry in the file (for current awareness searches).... The new database is to be welcomed as it makes access to information on HMSO publications easier and more convenient. Dialog users will have access to both HMSO and non-HMSO British official publications by switching between the HMSO and Chadwyck-Healey non-HMSO files. The forthcoming CD-ROM version combining these two files in a single disc offers even greater searching convenience (*Refer*, 1989, p.22). [This has been released in March 1989]
>
> (b) **Diskette data from US federal agencies.** The National Technical Information Service publishes a catalogue called *Data Files on Floppy Diskette* that lists over 80 data files from 15 U.S. government agencies currently available on diskette. In addition, NTIS can convert its inventory of over 1,000 data tapes to diskette at the request of the user (Anderson 1987, p.34f).

In addition, the process of distribution is effective. In Britain, for example, 'selected subscriptions' schemes allow libraries to obtain from the HMSO materials of their choice. Strings of HMSO shops retailing all key official output satisfy the needs of the general public. Out-of-print materials in current demand are available in dozens of libraries across the nation; and invaluable services are provided by presses such as Chadwych-Healey, whose document delivery services and publications give continuous support to newer libraries in their acquisitions efforts.

In America, where strenuous efforts are made or constantly being recommended to ensure that the public has easy access to official documents, '... Congress has created an institution, the depository library system comprising over 1,400 locations around the country, where anyone can walk in and put their hands on a piece of information that the government has made available' (Willard 1986, p.324). Willard also explains the concept of 'on demand' publishing, where the NTIS 'has millions of titles under its control, and can provide any one person in this country one copy of any item upon request' (Willard 1986, p.324). Nearer home, in Japan, the Council for the Diffusion of Government Publications (1956-) established in the Prime Minister's Office is charged with the responsibility of drawing up strategies for the efficient production and distribution of official documents. A nation-wide system of Service Stations for Government Publications ensures that all who wish may have access to such documents. In most of the these countries legal and traditional depository libraries spread throughout the nation help to ensure that BC over the bulk of official publishing is effected. Materials are not only being preserved; but in the meantime users are able to go to scores of libraries to obtain most of what they need. Big central libraries act as lenders of last resort for the more exotic documents.

THE MALAYSIAN SCENE

Compared to the bibliographically advanced countries the local scene is less encouraging. Problems are faced in obtaining information relating to official publishing (current and retrospective); current information on issuing agencies; and there is no single department or organization to which acquisition requests may be directed. Finally current deposit legislation provisions are extremely limiting. These features are discussed below.

(i) Information on Older Publishing

From the late 1700s to the current century, the different states in Malaysia went through different degrees of colonial rule. The Straits Settlements (now Penang, Malacca and the nation-state of Singapore) were British colonies. The 'Federated Malay States' (FMS) of Perak, Negri Sembilan, Selangor and Pahang were under British administrative rule, while the 'Unfederated Malay States' of Kedah, Perlis, Johore, Kelantan and Trengganu, were obliged to accept British advice on all matters save on religion and Malay custom. For the Straits Settlements and the FMS the government Gazettes carried notices on publications issued by private presses, the notification of which was statutorily required under enactments such as the Preservation of Copies of Books Printed in the Colony (Ord. No.XV of 1886). Legislations did provide for maintaining 'A Catalogue of Books printed in the Straits Settlements', Printers and Publishers Ordinance (section 6, Ord. 2 of 1926, rev. edn.) and 'A catalogue of Books printed or published in the Federated Malay States' (section 6, Cap.90 of 1916: an Enactment to provide for the preservation and registration of books). All these enactments provided for legal deposits of publications to be made at the British Museum. However, the Government Printer was specifically exempted from such provisions. These enactments were also regulatory in nature, and early objective was probably to ensure that printing presses were not being used to produce materials which could be against the interests of the ruling authorities, or otherwise misused. Under such circumstances, it was not surprising that the Government Printer was exempted, as its publications were all authorised beforehand. This situation meant that :

> Nor was all printed material caught by the registration system. Government publications were exempt from registration, and therefore, ironically, are not well represented in this [the British Museum's] most official of collections (Proudfoot 1989, p.10).

To date, for older materials, there is no single list similar to that of the updated US *1909 Checklist*, and no one knows for sure what has been published *in toto*. Thus for retrospective searches for official imprints, besides ploughing through all issues of the *Gazettes*, one should have to depend on less official and comprehensive sources. Chuah describes over a dozen bibliographical listings on government publications including R.O. Tilman & P. Burn's *Guide to British Library Holdings of Government Publications*; M. Roff's *Official Publications of Malaysia in New York Libraries*; the *Catalogue of the Singapore/Malaysian Collection* of the University of Singapore Library, published by G.K Hall in 1968, the *Supplement* to which was published in 1974 by the University Press (Chuah 1988, p.II5-27.) Such searches necessarily tend to be tedious, and represent a two-tier search - first for the bibliographies; then for the items (if they are listed). As most are holdings lists, there is no single comprehensive, authoritative source that one can turn to for a complete bibliographical overview of pre-war (and even of pre-Independence) publishing by the various administrations

(ii) Current Information

As in other countries, the main tools for general BC may be expected to emanate from two official sources: the Government Printer and the National Depository. The relevant lists are the *List of Publications* of the Government Printer; and the *Malaysian National Bibliography*.

List of Publications of the Government Printer. Contrary to the belief of many, the *List of Publications* is not a comprehensive listing of all government publications for the year, nor an accumulated listing of all government publishing undertaken by the Government Printer.

> During the 1960s the operations of the Government Printer expanded following developments after Independence. The switch to Bahasa Malaysia as the national language resulted in an increase in printing jobs as texts of several documents have to be printed in both English and Bahasa Malaysia. To cope with the increasing volume of work, it was decided to continue decentralization of printing operations and new plants were set up in Ipoh in 1964 and in Miri (Sarawak) in 1981, resulting in a total of six branches undertaking printing jobs on a regional basis. Currently the press at Alor Setar does printing for Kedah and Perlis; the Ipoh press takes care of Perak and Pulau Pinang; Kuala Terengganu caters for Kelantan, Terengganu, and Pahang; Johor Bahru copes with the needs of Johor and Melaka and Kuching and Miri takes care of Sarawak (Chuah 1988 p.54-55).

The Government Printer at Kuala Lumpur headquarters concentrates on publishing parliamentary papers and publications of the Federal Territory of Kuala Lumpur and the State of Selangor. This has tended to disperse both information and publications, and no centralised information is maintained, thus the *List of Publications* is not intended to be a 'union' stocklist of all branches; each branch tending to issue its own publicity

In the early 1980s the Government Printing Department went through a restructuring process, the objective of which was presumably to allow it to cope with the vast amounts of printing work required by a much expanded government machinery. More and more departments were allowed to print their publications (annual reports, bulletins, magazines, etc.) at private presses. By 1986, it was estimated that well over 90% of the printing work done by the Government Printer at Kuala Lumpur was to satisfy stationery needs of government departments. Of the balance were the government *Gazettes* (all parts); some listings (e.g. federal establishment lists); significant publications (e.g. the national plans); and reports of some key departments. For the latter, most were returned to the originating departments for distribution/sale. (interview with Deputy Director, 31 March 1986). Thus the *List of Publications* though fundamentally still important, is of extremely limited use as a guide to official publishing. The titles listed represent (a) those that are printed and to be sold by the Printer; and (b) only those titles that are in stock. No cumulations have been issued for all Government Printer imprints; and it is unlikely that this is possible as no information is recorded of printing jobs beyond a few years. In addition, no union list of publications by all the branches is available.

The Malaysian National Bibliography (MNB). This was first issued in 1969 (for 1967); and since 1983 has been computerised. As a finding aid to records listed, it is acknowledged to be superior to accessions lists and publications listings as it provides multiple access points and records are created in accordance with international standards. However, its defects are that it is fairly behind: in June 1989, the quarterly issue of January-March 1987 only is available, thus affecting 'its usefulness as a selection and acquisitions tool' (See Chuah 1988 p.102-5). This situation is likely to improve in the future, when the National Library of Malaysia (NLM) is fully computerised.

Departmental Lists. In the absence of any single, tool or source which consolidates information on the sum total of official government publishing, whether for old or current materials, the inquirer of government publishing has to journey from department to department. Here he will meet with varying degrees of success. For example, the Ministry of Agriculture's *Bibliography of Publications, 1910-1982* is very useful; as are bibliographical series issued by the Nuclear Power Unit at the Prime Minister's Department, the National Valuation Institute and the Malaysian Centre for Development Studies, though not all items listed in the latter are official documents. Various research and institutes e.g. the Rubber Research Institute (RRI), Forest Research Institute (FRI), and the Malaysian Agricultural Research and Development Institute (MARDI), have documented fairly comprehensively their own institution's output; as have departments such as the Geological Survey Department; the Statistics Department and the Information agencies. But such practices are exceptional, and there are equally as many departments especially at the state level that have not even file information on their own publishing output. The results are therefore uneven; and comprehensiveness of information is certain to elude the enquirer.

Library holdings Information. For some years now the Sabah State Library has been issuing a quarterly 'Government Publications' accessions list which is especially useful for locating official publications issued in the State of Sabah. Since 1986 UML has maintained a computer database of the bulk of its government publications. Besides online access listings of the collection by issuing agency and title of publication have been produced for internal use. Undoubtedly, the biggest pool of information would be contained in the MALMARC (Malaysian MARC) database (see Table I) created since 1976 by a library consortium for shared cataloguing comprising the NLM and six academic institutions (see Lim 1980 for a description of MALMARC). This database is not available to non-consortium members, although records may be purchased from the consortium. It is currently not used as a tool for acquisitions by the general run of libraries, though this may change in the future.

(iii) Absence of a Central Supplier

The absence of a central department, or supplier to whom libraries and the public can turn to obtain the bulk of official publishing is a real hindrance to effecting BC. The lack of the equivalent of HMSO bookshops or any significant book dealers in official publications exacerbate the problem of dispersed government publishing. The major problem faced is that many official publications are not for sale as they are published as statutorily required for reporting departments to their respective authorities, and therefore are not necessarily for sale to the public. Thus libraries which are unsuccessful in getting on to a department's mailing list to receive complimentary copies will very likely not ever be able to obtain many items.

All these problems make the legal depository provisions of paramount importance as a tool for BC of official publishing by individual libraries.

(iv) Depository Legislation

The most serious setback to BC by libraries is doubtless the passage of the Deposit of Library Material Act of 1986. Prior to this Act, specifically between 1966 and 1986, Malaysian deposit laws provided for one legal deposit, NLM, and eight other demand depositories comprising libraries to academic and research institutions, and state libraries. The current Deposit of Library Material Act 1986, effective in 1987, repealed the 1966 Preservation of Books Act. It retained one legal depository only (the National Depository which is the NLM); and removed demand rights from all the other demand depositories. The reverse had been hoped for. That is, in view of the nation's commitment to UAP to greater and easier access by all to information; and in the light of international trends to establish adequately large numbers of depositories, that more libraries would be scheduled to receive government publications, at least. With the current situation, acquisitions by any institution, apart from the NLM is likely to be adversely affected (Khoo 1987; *in press*). It has been established that in all the academic institutions, for example, collection of government publications had depended almost entirely upon legal deposit provisions. After 1987 the old depositories have still been getting gifts as a tail-end effect of the old depository legislation. For UML a special Government Publications project was launched in 1985 to send part-time staff to government departments to collect official publications. This project is apart from, but running parallel with, gifts still being obtained for the main collection. Statistics gathered in respect of official publications for the project are shown in Table 2. Though the data is very raw, it is sufficient to indicate that libraries hoping to effect better BC over Malaysian official publications cannot afford to sit and wait for materials to arrive. On the other hand, the cost of going to the field to collect is probably beyond the resources of most libraries.

(v) Unawareness, Distribution Priorities and Enforcement

Other factors affecting BC adversely relate to general unawareness of the importance to deposit materials with various types of institutions and often an inability to do so due to small print runs. It has been noticed that many government departments do not send in copies of their publications to anyone, not even the NLM not because of recalcitrance or unwillingness to cooperate but merely because they forget, or are unsure that such publications are required to be deposited under the Act. Moreover, in the formats that many 'publications' now appear, many may be excused for not remembering that these are 'publications' by library standards. The policy of having small imprints adopted now by many departments with tight budgets also make it hard for them to remember everyone in the distribution process. Those in direct control get a copy; the rest of the copies (especially if not many are left) are kept as 'spares'. The absence of genuine recalcitrance makes it difficult to enforce the Act; or to penalise 'offending' departments even if such omissions were discovered.

In the more bibliographically developed countries the acquisition of, and access to, key government documents, and those documents required to meet the normal mainstream of user demand is a problem that has largely been solved. Problems in these countries have moved up one level, as it were. Libraries and their administrators may still face problems of funding, space and staff to deal with their documents collections. Though the tracking of fugitive items still pose problems (see Copeland *et al.* 1985), the main preoccupation currently is towards what to do with the materials after they have been obtained. Problems associated with more efficient methodology for organizing the materials; speedy information retrieval to meet user needs; greater publicity for access now form the foci of attention.In countries that are less bibliographically endowed, such as Malaysia, at least two sets of problems prevail, (a) the first-level, more fundamental concern as to how to obtain the physical items in the first place; and (b) those same organizational problems faced by sister institutions elsewhere. It is to these problems that we now turn.

III. 'BIBLIOTHECAL' CONTROL AND BIBLIOGRAPHIC CONTROL FOR INFORMATION RETRIEVAL

> While this is not the place to enter the debate on bibliographical semantics, it is essential to disentangle the concept of *handling materials* from that of *manipulating the information* they contain... the former will for our present purpose be identified as 'bibliothecal control' and the latter as 'information retrieval' (Pemberton 1982, p.150. Emphasis added.)

With Pemberton's definitions as background this section will examine these two aspects of bibliographic control as they relate to Malaysian official publishing by focussing on four topics:

- **Defining parameters** for collection-building;
- **Location** of the government publications collection within a library;
- **Methodology** for organising the collection; and
- **Management control** of the collection.

DEFINING PARAMETERS FOR COLLECTION-BUILDING

In collecting official publications, library administrations must decide on what to collect; and how much to collect. Parameters are geographical boundaries, levels of administrative hierarchies, subject fields and format of materials. Depending on library resources of storage, staff and funds, decisions are taken on what parameters within which to operate. In most libraries, the Documents Section which houses official publications would normally include official publications from national, regional and international sources. In the United States, where a chain of nearly 1,400 depository libraries form a base for BC of official publications, each must decide how much they wish to collect. At one time, 25% of US official publishing was recommended as a guideline though each library could exercise its own discretion.

In Malaysia, of the handful of libraries that have established separate government publications sections, that at the National University of Malaya (**Universiti Kebangsaan Malaysia:UKM**) Library adopts the principle of incorporating all national, regional and international documents together, with about equal collection strengths for local Malaysian and international documents. The Documents Collection Section at the **International Islamic University Library** (IIUL) which is a much smaller collection, follows this practice. For the **Sabah State Library**, however, whose collection is considerable,

> ... the collection policy limits the coverage to Sabah, Sarawak and Federal Governments. An attempt is made to collect every publication issued by Sabah Government, but the coverage of the Federal and Sarawak Governments is limited to those expected to be in demand. Priority is given to statistics, manufacturing, development, budget, laws and legislation (Mitchell 1983, p.16)

The focus is thus towards 'national official publishing'. The collection at UML follows the geographical parameters of the Sabah State Library, but reverses the order of priority for documents collection in terms of administrative hierarchy. Federal documents are more actively sought out, with state documents being limited to 'main categories' of documents such as annual reports of key state departments and statutory boards. Other parameters also vary, with UML's collection being wider in scope, comprising organizational charts; pamphlets, posters, souvenir programmes, broadsheets published as a matter of routine, and artifacts issued or created in commemoration of special events. This last category which admittedly is a small collection, includes a clock, issued by the Sarawak State Government to commemorate 25 years of Sarawak's independance within Malaysia; and medallions issued to commemorate the 25th and 30th anniversaries of the Employees Provident Fund. An all-embracing scope has been specified by the **National Depository**. The scope is determined by the relevant legislation, and is currently scheduled as follows:

Library material	**No.of copies**
1. Printed library material including books, serials maps, charts and posters	5
2. Non-printed library material including cinematograph films, microforms, phonorecords, video and audio recordings and other electronic media.	2

The scope of collection-building both in terms of breadth and level of administrative hierarchy is a significant determinant contributing to overall BC of official publishing.

LOCATION OF GOVERNMENT PUBLICATIONS COLLECTIONS

Library administrations have the options of either (a) integrating the official publications within the main library collections; or (b) establishing a separate collection for documents. Each decision is linked to the next question: that of organizational methodology practised upon the collection for information retrieval. In general, integrated collections would tend to be subject analyzed and processed according to whatever classification scheme and set of cataloguing rules are used by the library. Libraries which have established separate collections tend to do so as they wish to adopt a special classification scheme or otherwise adopt a different set of processing rules for this collection, quite different from those used for other monographic and serial works in the library.

There are many examples proving cogent arguments for each of these decisions. 'From the outset in 1967, **La Trobe University Library** established a separate collection of government publications in the social sciences, to include publications of federal, state and local governments and of international government organizations' (Miller 1982, p.9). At **York University Ontaria**, it '... was decided that the collection should be a separate one physically, and that it should be classified by a special documents oriented classification, which was not yet available...' (Cannon 1982, p.66). A similar decision was taken by the Legislative Library at British Columbia, Canada which 'has always maintained a separate documents collection, shelved by issuing agency' (MacEachern 1982, p.7l); and also by the Trinity College Library at Dublin (Goodwillie 1982, p.87). Other libraries, however, are with the Library Parliament, Ottawa which took a decision, some 30 years ago that '... where practicable, to integrate the official publications collection into the main collection ... and classifying materials when this is judged to be the most useful approach' (Hardisty 1982 p.42).

The Malaysian libraries are similarly split. Most libraries have integrated their government documents collections into their main collection. The separate collections established in the four libraries noted above have been recent phenomena: the oldest being that at the UKML dating from the mid-1970s; that at Sabah State Library from the mid-1980s; that at UML from 1985; and at IIUL from just a year or so ago. Basically, the location of a collection is not particularly important, except for the impact this has on access, both in terms of physical access, but more important, in terms of access to information on the collection.

ORGANIZATIONAL METHODOLOGY AND PROCEDURES

The 'integrationists' generally attempt subject access via the classification scheme, and filing order (of the catalogue and shelf order) being determined by the scheme and cataloguing practices adopted. The 'separatists' on the other hand, have tended towards either (a) ignoring subject analysis altogether, but use notation schemes to determine shelf order; or (b) for those with access to computers, to use a notation scheme in conjunction with indexing procedures for information retrieval. (c) Another solution is for a library to adopt a mixture of both methods. Thus examples of the above are:

(a) **National Library of Malaysia**, which maintains an integrated collection and subjects the total collection to cataloguing and classification, the scheme at the NLM being Dewey.

(b) **Institute of Development Studies, Sussex**, is one of many examples where the library 'uses none of the standard classification schemes but instead relies on fairly extensive subject indexing based on a set of descriptors appropriate to the scope of its collection' (Gorman & Downey 1982, p.131).

(c) **Library of Parliament, Ottawa**, where 'a substantial proportion' of its official publications are integrated into the main collection and are fully catalogued and classified. 'Meanwhile, the publications of foreign countries and international organizations which are not given library cataloguing are arranged according to schemes provided by the publishing governments and organizations' (Hardisty 1982, p.50).

In Malaysia, as elsewhere, the trend seems to be that those with substantial collections of official documents used in a research oriented environment would establish separate collections and not subject the collections to full cataloguing and classification. The reasons for this non-adherence to standards set for bibliographic description stems from observations by document librarians that even the fullest of cataloguing and most accurate of classifying is unlikely to help either the librarian or the user in information retrieval. An indication of problems faced by users if official publications were processed traditionally is as follows.

Issuing agencies. 'Frequent, some may say continual, changes in the names of issuing bodies are a constant problem in the cataloguing procedure' (Gorman & Downey 1982, p.130). Under current cataloguing rules the researcher will certainly have to wade through many inversions, standard headings, 'sees' and 'see also' before he gets what he wants, if he gets it at all. The chief problem encountered with cataloguing rules is that they do not basically recognize an issuing body or publisher as a 'subject' in traditional terms, yet this is one of the primary facets by which users of official documents request their materials. This was the case in Malaysia in the mid- to late 1970s when many public enterprises were created. This aroused a lot of interest which has not abated. Publications by such organizations had to be used as sources of information in conjunction with materials on them. Under traditional cataloguing, these documents became scattered (by subject), and could not be retrieved easily. For those researching a particular quangco, that element which read merely as 'imprint detail' to the cataloguer was in fact the researcher's 'subject'.

Titles. As Mitchell has observed:

> A thorough examination of Sabah and Federal Government agency and statutory body publications showed that if catalogued according to AACR2, the majority would be entered under title. A brief study of the most common means of retrieval indicated subject matter and issuing agency are most often requested... Furthermore, entry by title is not practical because a great many titles begin with the words study, report, monthly and annual (Mitchell 1983, p.15).

Under conventional rules, many of the documents a reader needs may well have been catalogued by title, the least familiar element in most instances.

Subject headings. In addition, traditional subject headings are too broad to be of any real use, and quite often cannot catch up with the current language of the literature. An additional problem is posed with publishing in a multilingual environment. A document on a very local and specific topic may only be useful if it was retrievable under that specific local term. To have it buried under a more general subject heading may well incur loss of its usage *in toto*.

Indexing and Notations

> As I argued some years ago, librarians try to make classification numbers serve three purposes - subject access, shelf arrangement, and link between catalogue and shelves - and they serve none of those well, since most class numbers provide grossly inadequate subject access while being far too long and complex for shelf arrangement and for users to carry in their heads between consulting the catalogue and finding the items on the shelves. The functions need to be differentiated (Line 1988, p.12).

The necessity of avoiding the type of problems outlined above have made documents librarians realise the truth of Line's observations; and that for government publications particularly, intense classification and cataloguing efforts may only bring forth a mouse in information retrieval. Many libraries therefore have decided to adopt or devise a simple notation scheme for shelving purposes and in-depth indexing for subject access.

Indexing. For the type and depth of indexing envisaged for a collection of any significant size at all, the process of indexing has to be automated to be effective. Three considerations need to be taken into account: the hardware; software; and a high degree of professional organization of index terms. Minimally, there should be sufficient storage for the data to be stored and to be efficiently manipulated. The software should prefereably be an indexing package with an ability to index the fields desired, produce the necessary dictionary lists, and preferably be able to allow for basic boolean searches. As the number of fields indexed affects the size of storage needed, decisions must be taken to balance the two factors. Additional index terms may be introduced apart from the ones existing in the database. Thus, if titles are indexed and yield two terms 'apples' and 'oranges', it might be necessary to introduce the more generic term 'fruits'. A necessity for linking terms must exist; and cleaning up of dictionary terms needs be done for the final authority terms to be clear. The processes become more complicated in multilingual databases than in monolingual ones, especially if, say, two or more languages share words that are identical in spelling but carry different meanings for different languages e.g. *'air'* ('water' in Bahasa Malaysia) or if two differently spelt terms mean exactly the same thing, e.g. 'oranges' is identical to 'oren', as would be the case in a Malaysian database.

Notation. In this, most libraries are with Miller who felt that any notation should be as simple and as brief as possible and reflect only those elements which seem essential. These elements include 'jurisdiction, issuing body, form and a unique number for title' (Miller 1982, p.10).

Malaysian libraries have each tended to go its own way in devising notational schemes for their official collections. UKML uses mainly the issuing agency indicator for filing their card catalogue and for determining shelf-order, with the collection being divided into two sections, one for local and another for international documents. The IIU's notation indicates jurisdiction and provenance. It includes an LC class number for subject analysis, and a Cutter number for the document (IIUL 1987). The Sabah State Library's notation indicates jurisdiction and provenance; the document's generic type; and individual title indicator. UML's notation is yet to be devised, but it is likely to be fairly simple. Elements will include jurisdiction, provenance, form and date. A unique document indicator will probably be drawn from these indicators e.g. 'AR 1977' for an annual report of that year.

Clearly, complete agreement on basic elements to be included does not as yet exist. It is expected that other departmental libraries are also devising notation schemes for their collections and these are likely to differ both in terms of inclusion of elements, and in their placing and location within the notation.

MANAGEMENT CONTROL OF THE COLLECTION

Most libraries know more or less how many books they have; extent of serial runs, maintains endless statistics on loans, the number of visitors, etc. It is often surprising that perhaps besides the absolute size, few librarians posses few other details about their documents collection. Less information is available, if at all, on such features as the collection by type, mode of acquisition, by cost, the currency of documents, and so on. As Morton has observed 'It has long been apparent that documents librarians generally have given low priority to the keeping and use of statistics' (Morton, 1984, p.195). Yet the need for subjecting such a collection to monitoring is fairly essential, if a library is to be able to report effectively on such features as use of the collection, in order to maintain or obtain specialised funding, space used, staff expertise, all of which are in turn of utmost importance in getting the most out of a documents collection. Like so many aspects of library services, the monitoring of usage also leads to improvements and more efficient methodology for handling queries to be instituted (See Lamble 1982, p. 27-28 for an example of this point.)

Such a situation is generally the case with libraries in Malaysia. Thus even for those libraries which are in the MALMARC consortium, which would have indicated the jurisdiction levels for their government documents holdings, they would be hard put to state how many federal documents they possess as against state or district level publications. It would be very surprising if any one can state how much their collections cost them to establish; or even to estimate a value for the collection. There is much truth in the following comment:

> Documents librarians can learn much about their collection, their library, and their own judgment by analyzing and applying statistical data to a problem. Likewise, much can be learned about documents librarianship through the aggregate and comparative analysis of various libraries. To do this, however, the numberical data must be compatible - the same things have to be counted, and they must be counted in the same manner.... without statistical data indicating the status quo, there can be no empirical measure of accomplishment of stated goals or the success of implemented programs (Morton 1984 p.196; 197).

The ideal in BC for a documents collection would be as follows:

(a) an ability to process materials quickly and efficiently, at a minimum cost;
(b) ensure as wide a subject access as is possible; and
(c) maintain management control over the collection to be able to monitor such features as its usage, usefulness and cost.

All over the world, documents librarians are trying to achieve these objectives, with varying degrees of success. Some with better funding, more experience and greater expertise, have achieved their objective; others on the other end of the scale are still striving. Below is described a case study of a small collection in the latter category.

IV. BIBLIOGRAPHIC CONTROL OF OFFICIAL PUBLICATIONS
CASE-STUDY OF UNIVERSITY OF MALAYA LIBRARY

The establishing of the University of Malaya Library (UML) 'PR' collection (Persuratan Rasmi or Government Papers) in 1985 has been described elsewhere (Khoo 1985) and it is not intended to repeat its history. It is only necessary here to highlight the experimental nature of the collection and procedures being adopted for its organization. In consonance with beliefs, observations and recommendations at UML and elsewhere, it was decided to set up a separate collection of official documents in an attempt to effect better BC of Malaysian official publications.

Acquisitions. The University of Malaya as an entity, had enjoyed depository status for nearly 40 years and until it lost its depository status in 1987, it had been integrating government documents into the main collection. In view of the difficulties associated with collecting Malaysian official publications which became more evident after the loss of depository status) and the increasing importance of these materials for both teaching and research, a concerted attempt to put the collection on a firm footing was felt to be necessary. From 1985, items collected from past efforts are being extracted from the main collection and added to the PR collection. The main methods of current acquisition were decided upon, as follows:

(a) A five-year 'blitz' effort (1986 -1990) in sending out field assistants annually on a month-long stint to collect publications from departments at federal, state and district level; and to firmly establish UML on the mailing lists of government departments;

(b) For the rest of the time by scanning issues of the MNB, accessions lists of other libraries, scanning the daily newspapers, talking to researchers, particularly in the social sciences, to try to track down relevant materials for acquisition by gift or purchase.

Organization. The total collection of government documents in the MALMARC database (as at June 1989) is about 15,000 unique records. This represents the catalogued holdings of the National Library of Malaysia and five Malaysian university libraries, since the mid-1970s, one of which, USM has fully converted all its library holdings (Table 1). The PR collection at UML therefore, was not expected to be very large, in absolute volume; and over the first five years was not expected to exceed 20,000 volumes, even with the amalgamation of retrospective materials. This was also in view of a decision taken to leave all legal materials in the Law Library; this would have formed a significant percentage of the official publications held within the system. It was decided not to catalogue and classify the collection, but to input all relevant data for indexing.

Notation. The collection is at present shelved in closed access, by issuing body. A notation scheme will be devised, but work has been delayed as a result of staff shortages and other pressing demands of computerisation.

Management. It was decided from the outset that managerial control and monitoring of the collection would be essential. In any case, the project was an approved research project of the University undertaken in conjunction with the National Institute for Public Administration Institute and therefore had to be reported upon biannually. It was also felt that so little was known about the nature of Malaysian government publishing especially in terms of departmental publishing trends, pricing, and other policies, that as full information as possible would be captured.

Hardware. The Library is still without mainframe or mini computer facilities. It had, however, a few PCs. For the collection an IBM PC/AT was made available, with a 40MB hard disk, later upgraded to 80MB.

Software. A problem was encountered on realizing that statistical or management software packages do not retrieve information very well; and that conversely, packages capable of handling indexing do not count at all. It was decided that, expensive as it may have to be, that the management software would have to be written in dBASE; and that information retrieval would have to utilise any of the software packages available. In 1987, on application to Unesco, the Library was gifted the CDS/ISIS ver.I. In 1988, it obtained ver. 2.

dBASE programme. The use of dBASE as a data management tool involving bibliographic data has been well-demonstrated (see e.g. Pollard 1988). In 1987 a programmer was found to write a programme in dBASE3 Plus to cope with the management of the data. Input elements are as follows:

- issuing agency
- title of item
- 'author' (if any, e.g. chairmen of committees; individual authors of specific reports etc.)
- type of materials (monographic or serial)
- year of publication, or date element
- format (pamphlet, organization chart, poster, etc; in original format or photocopy)
- source of document (purchase, exchange or gift; by donor)
- cost of acquisition (prices paid)
- cost of photocopying
- notes
- the notation, when devised, will also be input.

A special field was created for annual reports of departments, so as to be able to recall and analyse this type of publication more efficiently. For many departments annual reports represent the only publications by or on them. As such they are invaluable for research, and are much in demand. Appendix I describes the dBASE programme.

The Library has been able to monitor the growth of the collection by form reports, type and by issuing agency. It is also possible to generate reports according to specialised demands e.g. all publications issued by a department; all publications held on a particular state in the federation; etc. Most important, it allowed the Library to monitor the costs of acquisition; and measure this against the value of gifts received.

Information Retrieval. In the long run, as full subject access as possible would be available. By 1988, the collection had grown to over 10,000 items; with more than 8,000 being unique records. Better subject access was felt to be imperative. In 1988, Unesco again kindly responded to the Library's appeal for a conversion programme to CDS/ISIS. In June 1989, the Systems Analyst on secondment to the Library successfully downloaded the data from dBASE to CDS/ISIS, thus allowing for better subject retrieval. Appendix II describes the procedures.

Indexing. As a pilot project, it was decided to index only one field, the title field. This has been found to be fairly useful for retrieval, given the fact that titles to official documents tend to be clear; indicate specifically the contents of the document; and do not generally possess exotic meanings to words. A dictionary of terms in titles (in both English and the National Language) to the total holding may be browsed. Much work still needs to be done: in the 'tagging' together of departments which have developed from many previous predecessors to facilitate retrieval; index terms have to be cleaned up, or inserted, as it is noted that: 'A mass of uncontrolled and unedited keyword terms could be a nightmare' (Line 1988, p.13). For the present, due to a total lack of hardware for OPAC services, such searches have still to be channelled to the Documents Librarian, Ms. Kristin Cheah. The Library hopes to be able to computerise on an integrated basis, with its own inhouse microcomputer by 1990. With this realised, developments will be towards better information retrieval. More sophisticated help screens will be created to help OPAC users along. Appendix III shows the results of a search made for the term *durian* (a local fruit). The search elicited 10 items out of the 15,000 records; results were sorted by issuing agency; and printed. Sorts by author/title are also possible.

Lists. In the meantime, in addition to online access, hardcopy listings are available for consultation. Appendices IV and V are two sample pages taken from the listings by (a) Issuing Agency; and (b) alphabetical listing of titles.

Storage. A total of 36MB has been used for storage. This consist of 30MB in dBASE (17MB for the Master File, 12MB for 9 indexes, and 1MB for programmes); and 6MB in CDS/ISIS (Masterfile, indexing one field, and programmes). This still leaves 44MB for expansion in the Masterfiles, additional indexing and space for data manipulation.

Problems and Constraints. A problem encountered is with the generation of listings. The process is tedious and can take many hours with a relatively small database of a few thousand items. Online access to information, however, takes no time at all. The methodology employed effectively necessitates the maintenance of two databases: one on CDS/ISIS and one on dBASE. Some may feel that this is an expensive way of doing things. However, two different sets of problems are being tackled, thus the idea of how 'expensive' a method is must be viewed in relation to the end results, and of whether such results are worthwhile. In a sense, there is an analogy to the keeping of author/title and subject card catalogues. Libraries maintain both catalogues at the same time, yet do realise both serve two purposes, and thus justify the time and effort involved in this duplicative process.

Patently, this method cannot be possible for a very large database, as the PC will run out of storage. It has to be remembered that the usage of fixed fields in dBASE implies that a certain amount of wastage is inescapable. In addition, storage approximately the size of the database itself is necessary in order for data to be manipulated. With technology, however, one has to live in hope that over time, advances in both software and hardware will reduce or eliminate such wastages. In the meantime, so long as data is captured, it will serve its uses for online access, and will be ready to be more efficiently stored and manipulated in due course.

The collection is still a long way towards being an established *referral collection*. However, the Library has hopes for its future. In 1989, shelving is to be made available in the new Malaysian Periodicals Library for it to find a permanent home. With purchase of hardware, it will have its own terminals for public access. A Documents Librarian who has been enthusiastically involved with the collection from its inception, and who is therefore familiar with many aspects of official publishing will provide the professional expertise. Planning and implementation for information retrieval will be the responsibility of the newly-appointed Head of the Automation Unit, advised by a small group with interest in government publishing and their organisation. By the end of June 1989, all formal approval has been obtained for the Library to purchase its own minicomputer hardware system, and an integrated library system software. With these developments the BC of official publications will move to a new phase.

V. CONCLUSIONS AND RECOMMENDATIONS

This paper takes bibliographic control to mean BC of data and information, as well as of the physical body of Malaysian official publications. From findings presented, a few observations and recommendations may be made.

BIBLIOGRAPHIC CONTROL OF DATA AND INFORMATION

Standards and Standardization

The creation of and adherence to standards is well recognised as tools for BC. Standards for bibliographic description have long been the concern of Malaysian Library circles. Ongoing projects at the National Library, forums provided by the Library Association, *ad hoc* efforts by different institutions, have focussed attention on a variety of standards in library work. The adoption of the MARC format by major libraries, application of AACR, and use of CIP and ISBDs, for example, have resulted in fairly high degrees of standardisation being achieved on general bibliographic description. In 1976 the Library Associations of Malaysia and Singapore established a Joint Subcommittee Bibliographical Standards (BILCO) which took over activities of previous Standing Committees. In 1980, it published *Standards for Bibliographical Compilations* which have largely been adhered to by subsequent compilers. The Joint and national BILCOs have continued to play a useful role in recommending standards, such as for adoption in reporting bibliographical projects; maintaining library statistics, and in other areas of library work. However, relatively little attention has been given

2.6

to the application of standards for processing official publishing, apart from the use of standard MARC tags for those in the MALMARC consortium. The current situation too should be noted.

(i) Most libraries with significant official publications collections are not members of the MALMARC consortium.
(ii)Those members of the MALMARC with significant collections are not inputting their official publications collection data into MALMARC; and
(iii) Most libraries have moved away from adopting traditional procedures of 'class. and cat.' for their official publications records, preferring to use inhouse notation schemes and indexing for bibliographic management and information retrieval.

Standardisation then, within this context, takes on a different complexion. The move is away from the standard full bibliographic description; focus should be on all the elements that should generally be captured to ensure data manipulation for different purposes. At the data management level, it would appear that there is minimally a need for the following:

(a) creating standards for those elements that are not yet standardized for use in data management, such as in notations; and
(b) recommending the application of those standards which have already found acceptance, to be used in such data management.

Two examples are given below.

(a) **Issuing bodies**. Document librarians would benefit from having a comprehensive list of all current departments and agencies, arranged by jurisdiction, with recommended standard abbreviations. Abbreviations should be arrived at with the needs of managing official documents in mind. Some useful preliminary work has been done, e.g. NLM's *Standard Headings for Malaysian Statutory Bodies* (1974); and Yeoh's *Malaysian Government Names: an Authority List* (1986). However, both are not comprehensive. It is also most unfortunate that the NLM's listing pre-dated the period when a large number of statutory bodies was established, as the list itself is informative and well-compiled, giving such details on statutory boards as date of establishment; brief history; body to which it is responsible; and address. An annual and comprehensive update along the lines of this publication would be a boon to official BC. In a country with a bilingual tradition, where some agencies and departments are better known by their abbreviated forms in English; and others in the national Language; and where variant forms occur for some agencies, a comprehensive listing of recommended standard abbreviations would save much time and effort for many librarians.

(b) Standard abbreviations for **names of states** within Malaysia have already long been accepted. Libraries, however, are still using variants from these standards, or are using numerical codes, to denote this level of jurisdiction. Firmer adherence to standards achieved would reduce confusion.

Standard Elements in Notations

Consensus on standard elements for inclusion in notations may also save subsequent libraries much time and energy in devising schemes. Researchers using different library collections are better served; and library management of data would be more uniform. It is clear that much time and effort have already been invested in devising schemes which basically describe similar collections. It is expected that many libraries all over the country are engaged in exactly the same persuit, the results of which might differ. Ideally therefore, one standard notation scheme for Malaysian official publications should be devised as a guide to ensure greater uniformity.

Input Standards

As more libraries move towards automation, recommendations on input standards will be useful. This will ensure not only better and more even management control, but should contribute towards better information access. The popularity of dBASE as a management tool; and CDS/ISIS as an indexing tool is obvious throughout Malaysian libraries. Enhancements and development in both promise immense capabilities for data management and on-line access to information which were not possible just a few years ago (see e.g. Pobukovsky 1986, p.339-45).

On-line Access

It might serve documents librarians well to note observations such as the following:

> Precise identification of any item is possible without detailed bibliographic description in 99.9% of cases, and the cost of detail in the remaining 0.1% does not justify its universal use.... a well designed online system, with keyboard access, should enable most wanted items to be found where one word in the title is wrong or where the author's forenames or initials are wrong - or even where the author or title is badly wrong but where one of them is right (Line 1988, p.11).

The observations (though originally applied to monographic materials) seem particularly apt for official documentation. For the future, increased attention to points stated above would seem indicated.

BIBLIOGRAPHIC CONTROL OVER THE BODY OF OFFICIAL PUBLISHING

The crucial issue in the bibliographic control of Malaysian official documents is a more fundamental one, and lies in the truth of the statement that: 'Poor bibliographic control accompanies difficult acquisition problems' (Castonguay 1987, p.168). To date, there is no one single source to which one can confidently turn, to obtain comprehensive information on the extent of official publishing at federal, state and district levels of jurisdiction. More important, there is no central point, or designated system, to which one can go to acquire, either by gift or purchase, all key official publishing (both monographic and serial) at different levels of jurisdiction.

In the (rather) long run, given the generally cooperative attitude of governmental departments, it may fairly be expected that five copies of most titles will probably be deposited at the National Depository. Unless the Depository is willing, in turn, to undertake massive programmes of photocopying/reproduction of these copies to meet subsequent demands for such items, one cannot see that general interests of bibliographic availability will be served. Such a programme is generally neither feasible, nor fair to expect of the National Depository. The solution must lie elsewhere.

National Publishing and Distribution Centre

The most obvious solution is that of 'centralization of all publishing activity, either in the Government Printer or with individual ministries' (Chuah 1988, p.164). Further, it has been suggested that a central body be established for both publishing and distributing official publications, along the lines of the Australian Government Publishing Service. Such a body will not only print and publish all key documents, it will establish publishing standards in style and format for all official publishing in the country and establish selling and pricing policies. More important, it will be responsible for the distribution progress: to the National Depository and all other institutions, organizations and individuals, by way of gift and sale. Some institutions which may have fair claims to be maintained on the mailing list have been suggested to include libraries, chambers of commerce, public interest and social reform groups, professional organizations, and research institutions (Khoo, *in press*). The basic consideration in measuring effective bibliographic control thus relates to the source for acquiring official documents. 'Is this source known and accessible?' (Hernon 1989, p.50). If the answer is in the affirmative, bibliographic control looks well to be in hand. If no such source can be identified, the obvious solution is to establish this source.

Legislative Reform

For the future BC of official publishing is to be achieved, reforms will be necessary to the current depository legislation. Not only should the old demand depository status be restored, but other essential depository points, such as all state libraries, should be granted such status. In 1988, through an administrative circular issued from the Chief Secretary's Office to all federal and state departments and statutory boards, the Library of Ohio University (USA) was designated to receive all Malaysian publications, including official publications. This is an enlightened and heartening step towards ensuring greater availability of official publishing outside the country (Circular No.3 of 1988 PM(S) 12011 Jld.VII/30 dated 19 November 1988). Thus, even if the current legislation is not amended, a similar device in respect of local libraries, for government publications at least, would enable part of their old demand status to be restored.

Documents Librarians Group

At present, teacher, academic, public and research librarian groupings have been well recognised by the Malaysian Libary Association. A documents librarian group has yet to emerge. The establishing of such an 'Interest Group' has been suggested along the lines of SCOOP (Chuah 1986, p.177). It has also been suggested that the Malaysian Library Association initiate a forum as provided by GODORT of the American Library Association. This group can then undertake activities such as study of deposit legislation, suggest reforms, and generally act as a voice for better official bibliographic control. (Khoo, *in press*).

Finally, it must be recognized that all standardization efforts will contribute little to effective bibliographic control if there is nothing much to standardize. From this viewpoint, one should wish to see a shift from national preoccupation with standardization in billographic description towards greater obsession with obtaining the physical bibliographical item. In the long run, if current deposit legislation remains unchanged and concomitant steps are not taken to establish a national publishing and distribution centre, one fears that a paradoxical situation could arise, with better bibliothecal control being achieved (over five depository items held in one depository), but with lesser availability of publications to individuals within the nation.

Conclusion

There are very good general indications of governmental concern for better access to official publishing. The University of Malaya project to collect and document official publishing was well received by the National Institute for Public Administration (Institut Tadbiran Awam Negara: INTAN) which also agreed to jointly sponsor the project with the University. The project received the blessing of the Office of the Chief Secretary to the Government which drafted an appeal letter to government departments to cooperate with the University and INTAN. The project has subsequently been approved by the Ministry of Science and Technology, which has granted, most generously, M$42,000 (10,000 pounds sterling) in support of the project. The 1988 Ohio University project has been noted. All these augur well as positive signs of encouragement at the official level. Throughout the last few years (1985-9) individual departments at federal and state levels have also cooperated willingly with the University, and in many cases, well beyond expectation. Most of the items were donated; or lent to the Library for copies to be made. A pool of official understanding and goodwill undoubtedly exists. The case for reform must come from the profession.

In facing the future together documents librarians in Malaysia need to reassert their professional commitment. Unlike their established counterparts abroad, Malaysian documents librarians are unknown to others, and to themselves. They have a trying time ahead. However, they and their library administrations should continue to press for reforms to the current structure of official publishing and distribution; simultaneously, all available professional experience and expertise should be brought to bear upon the management of official information, for the interests of the wider community.

Table 1

MALMARC Holdings of Malaysian Official Publications
(As at 15 June 1989)

Level of Jurisdiction	**Number of Unique Records**	
	Books	Serial Titles
Federal	5,116	763
State	601	439
Statutory Boards	7,299	449
Undetermined	40	55
Total	13,056	1,663

Notes: 1. The records are nearly all unique. A small number are duplicated owing to inconsistent cataloguing between various consortium members of MALMARC; mispelling, or wrong input of elements such as issuing departments, names of authors of monographic words, etc.

2. Serial title figures indicate number of serial titles, and not number of individual serial items.

3. Local authority publications have been merged with state departmental publications.

Source: Compiled from data generated by the MALMARC Unit, Universiti Sains Malaysia, whose kind cooperation is gratefully acknowledged.

Table 2

Comparison of Monographic Acquisitions 1988; UML Acquisitions Division and Government Publications Project

	Collection	**Monographs**		**Departments**
		No. of Titles	**No. of Volumes**	
i)	Acquisitions Div. for Main Collection	n.a.	136	28
ii)	Government Publications Section	356	573	345

Notes: 1. Figures are non-unique records.

2. Excluded from both collections are all serial materials (data for which was not available for the Main Periodical Collection), such as annual reports, posters, and ephemera.

3. Also excluded are gifts from universitites, including the University of Malaya departments. These are likely to be received without any legal obligations to deposit.

4. Of the 345 departments visited by the Government Publications project staff, not all were able to donate materials; most of those who were able to do so, gave serial materials.

Sources: i) Gifts and Exchanges Unit, Acquisitions Division.

ii) Annual evaluation report submitted to the Ministry of Science and Technology and the University of Malaya, Project on 'Official Publications of Malaysia; an Exercise in Bibliographical Control for the year 1988.

ACKNOWLEDGMENTS

Valuable assistance, comments and information from my colleagues Kristin Cheah, Molly Chuah, Ibrahim Ismail and Andrew Lee are gratefully acknowledged. The normal disclaimer applies. I thank I.J. Rasiah and Yoo Sang Nge for writing up Appendices I and II.

REFERENCES CITED

1. **Anderson 1986**
ANDERSON, D., 'Universal bibliographic control', in *Encyclopedia 1968-*, Vol.37 (1986), p.366-401.

2. **Anderson 1987**
ANDERSON, S., 'Diskette date from federal agencies', *Government Publications Review*, Vol.14 (1987) p.341-5.

3. **Cannon 1982**
CANNON, F.A., 'The CODOC Scheme, Canada, Part 2' in *Pemberton 1982*.

4. **Castonguay 1987**
CASTONGUAY, R., 'Maintenance and management of local government documents collections: survey findings; *Government Information Quarterly*, Vol.4 No.2 (1987), p.167-87.

5. **Chuah 1987/88**
CHUAH, M., 'International Bibliographical Standards in Malaysia: Application and Proposed Modifications', submitted for the unit on 'Organization and Management of Knowledge', MA in Library Studies, University College London, 1987/88.

6. **Chuah 1988**
CHUAH, M., 'Bibliographic Control of Official Publications in Malaysia', report submitted in part fulfilment of the requirement of MA in Library and Information Studies, University College London, 1988.

7. **Copeland *et al.* 1985**
COPELAND, N.S. *et al.*, 'Fugitive US government publications: elements of procurement, and bibliographic control', *Government Publications Review*, Vol.12 (1985), p.227-37.

8. **Encyclopedia 1968-**
ENCYCLOPEDIA of Library and Information Science, ed. Allen Kent & H. Lancour, New York, Marcel Dekker, Inc., Vol.1- 1968- .

9. **Goodwillie 1982**
GOODWILLIE, J., 'The development of bibliographic control of official publications in Trinity College Library, Dublin' in *Pemberton 1982*, p.87-97.

10. **Gorman & Downey 1982**
GORMAN, G.E. & J.A. Downey, 'Bibliographic control of official publications at the Institute of Development Studies, England', in *Pemberton 1982*, p.125-45.

11. **Hardisty 1982**
HARDISTY, P., 'The treatment of official publications in the Library of Parliament, Ottawa' in *Pemberton 1982*, p.41-50.

12. **IIUL 1987**
INTERNATIONAL Islamic University Library, *Aturcara Pengendalian Koleksi Dokumen* [Method for Organizing the Documents Collection], Kuala Lumpur, 1987.

13. Khoo 1986
KHOO, S.M., 'State papers collection: the first two years', *Kekal Abadi*, Vol.5 No.4 (December 1986), p.1-4.

14. Khoo, in press
KHOO, S.M., 'Malaysian library deposit legislation and use of official publications', *Government Publications Review* (in press).

15. Kuroki 1981
KUROKI, T., *An Introduction to Japanese Government Publications*, Guides to Official Publications, Vol.10, Oxford, Pergamon Press, 1981.

16. Lamble 1982
LAMBLE, W.H. 'Official publications at the Library Board of Western Australia' in *Pemberton 1982*, p.23-40.

17. Lim 1980
LIM, Edward Huck Tee, 'The Malaysian MARC (MALMARC) project', *Program*, Vol.14 No.3 (July 1980), p.101-20.

18. Line 1988
LINE, M.B., 'Satisfying bibliographic needs in the future - from publisher to user', *Catalogue & Index*, No.90/91 (Autumn/Winter 1988), p.10-14.

19. MacEachern 1982
MACEACHERN, J.H., 'The documents shelving notation of the Legislative Library. British Columbia, Canada' in *Pemberton 1982*, p.71-86.

20. Miller 1982
MILLER, A.E., 'Notation for the arrangement of official publications in the Library of La Trobe University', in *Pemberton 1982*, p.9-21.

21. Mitchell 1983
MITCHELL, C., 'Government publications at the Sabah State Library', *Majaleh Perpustakaan Malaysia*, Vol.XI (1983), p.11-17.

22. Morton 1984
MORTON, B., 'Random thoughts on numbers: the need for minimum uniform statistical reporting standards for US depository libraries', *Government Publications Review*, Vol.11 (1984), p.192-202.

23. Pearson & Gillham 1982
PEARSON, E. & V. Gillham 'The CODOC scheme, Canada: part 1' in *Pemberton 1982*, p.51-62.

24. Pemberton 1982
PEMBERTON, J.E. (ed.), *The Bibliographic Control of Official Publications*, Oxford, Pergamon, 1982.

25. Pobukovsky 1986
POBUKOVSKY, M., 'Unesco - cooperative development and promotion of CDS/ISIS system', in *Encyclopedia 1968 -*, p.339-45.

26. Pollard 1988
POLLARD, R., 'Bibliographic database management with dBASE: a study of secondary key retrieval on multi-valued data items', *Information Technology and Libraries*, Vol.7 No.1 (March 1988), p.56-66.

27. Proudfoot 1989
PROUDFOOT, I., 'Major library holdings of early Malay books', *Kekal Abadi*, Vol.8 No.1 (March 1989), p.7-17.

28. **Refer 1989**
REFER, Journal of the ISG (Information Services Group), Vol.5 No.3 (Spring 1989).

29. **Unesco 1982**
UNESCO Journal of Information Science, Librarianship and Archives Administration, Vol.IV No.1 (January-March 1982).

30. **Whitehall & Westminister 1984**
WHITEHALL & Westminister: Proceedings of the Seminar on Official Publications, London, 21 March 1984, ed. V.J. Nurcombe, London, Library Association, Reference, Special and Information Section, 1984.

31. **Willard 1986**
WILLARD, R.S. 'Whose information is it anyway? The privatization of government produced information', *Government Publications Review*, Vol.13 No.3 (May-June 1986), p.323-8.

32. **Yeoh 1986**
YEOH Hoong Kheng, *Malaysian Government Names: an Authority List*, BISA Special Project No.24, University of Sydney, 1986.

APPENDIX I

A COMPUTERIZED SYSTEM FOR THE MALAYSIAN GOVERNMENT PUBLICATIONS COLLECTION, UNIVERSITY OF MALAYA LIBRARY

Systems Development: by I.J. Rasiah, Physics Department, University of Malaya.

Release date: 1987

Background and Primary Objectives: The University of Malaya Library (UML) found it necessary to systematically organize materials in the Malaysian Government's publications. It was decided to computerize this collection as it was possible, by using the computer, to edit, reorganize, manage and list information of the collection in any manner as required by the user with ease. The steps are described below.

General Description. The Government Publication Collection system is a database system for the maintenance and management of the collection. This includes the entry, editing and deletion of records. Further, the search of the record(s) based on the title, author, department which published the material, etc. can be made. The system is also to print reports in a number of pre-prepared formats. These reports form the hardcopy records of the collection. The system is completely menu driven with useful messages in English. A set of utility programmes also come along with the system, which provide break-downs of various statistics collected upon the collection.

Hardware Configuration. The system operates on an IBM PCAT with a memory size of 640Kb with an 80Mb hard disk and one 1.2Mb floppy disk drive. An Epson 9 pin printer is used to print the reports. The system also runs on an IBM PCXT or its compatibles with a minimum RAM size of 512Kb. The hard disk configuration required is determined by the size of the collection.

Software. The system runs in an MS-DOS environment using programmes developed using the dBase3+ as the host for the database system. The database itself consists of single file with a record length of about 1Kb. It also has six indexes which are automatically updated as the data are entered. The maximum number of records that may be stored depends primarily upon the space available in the hard disk. The maximum number of records possible using dBase3+ is one billion. The command language is English.

[I.J. Rasiah]

APPENDIX II

CONVERSION PROCEDURES FROM DBASE3+ TO CDS/ISIS

This Appendix discusses the following areas:

i) The convertion of dBase3+ file to CDS/ISIS
ii) Indexing techniques in CDS/ISIS
iii) The search language in CDS/ISIS
iv) Discussion on *PR.MST*

SOME BACKGROUND KNOWLEDGE

1. To define a CDS/ISIS datebase, 4 basic components must be set up, they are the Field Definition Table (FDT), Field Select Table(FST), Display Format (DF) and the Worksheet(WS).

2. CDS/ISIS can import database which is in ISO2709 format (*ISO.MST* is the default name for such files.)

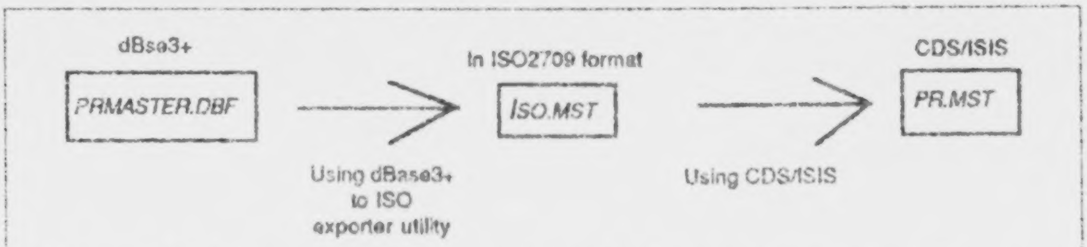
3. *DB3ISO.EXE* is a dBase3+ to ISO exporter utility written by Alejandro, this utility converts dBase3+ file into ISO2709 format.

4. The database in dBase3+ is *PRMASTER.DBF* containing data on the University of Malaya Library's Official Publications Collection. It is the source from which CDS/ISIS database *PR.MST* gets its data.

(i) CONVERSION OF *PRMASTER.DBF* TO *PR.MST*

In this exercise, a dBase3+ database called *PRMASTER.DBF* is converted into a CDS/ISIS database called *PR.MST*. There are 3 steps in the process of conversion.

a) Setting up a CDS/ISIS database structure that is compatible to that of *PRMASTER.DBF*
b) Convert *PRMASTER.DBF* to *ISO.MST* (ISO2709 format) using *DB3ISO.EXE*
c) import *ISO.MST* to CDS/ISIS



The above diagram show the process of generating a CDS/ISIS database(*PR.MST*) by extracting data from a dBase 3+ database(*PRMASTER.DBF*).

a) Setting up a CDS/ISIS database structure that is compatible to that in dBase3+

CDS/ISIS is executed and a database called *PR* is setup by defining the FDT, FST, DF and WS. Since all the data in all fields in *PRMASTER.DBF* is to be imported to *PR.MST* , the FDT and FST must be appropriately moulded ; Hence the *PR.FDT* and *PR1.FST* (Table 1 &2) both contain all the fields listed in the structure of *PRMASTER.DBF* (Table 3).

b) Convert PRMASTER.DBF to ISO.MST (ISO2709 format) using DB3ISO.EXE

The export of *PRMASTER.DBF* to ISO2708 format is effected by running *DB3ISO.EXE* .The input file is *PRMASTER.DBF*, with reference to *PR1.FST*, *DB3ISO.EXE* generates *ISO.MST* as an output file (Table 4).

c) Importing ISO.MST to CDS/ISIS

The import routine in CDS/ISIS is activated, *PR.MST* is generated from *ISO.MST*.

(II) INDEXING TECHNIQUES

A database is not very useful unless it makes speedy retrieval when meaningful search terms is specified, that is where the strength of CDS/ISIS lies. To make a particular field searchable that field must be indexed. There are 5 techniques in indexing a field.

Indexing technique 0
Build an element from each line.

Indexing technique 1
Build an element from each subfield.

Indexing technique 2
Build an element from each term or phrase enclosed in triangular brackets(<....>).

Indexing technique 3
Build an element from each term or phrase enclosed in slashes (/..../).

Indexing technique 4
Build an element from eachword in the field.

The fields and the type of index techniques desired are specified in the FST file. After indexing, all the data that is indexed is arranged in ascending alphabetic order in the dictionary and users can refer to this list to determine all the available search terms.

(III) THE SEARCH LANGUAGE

1. Precise access points

A precise access point is all searchable elements listed in the dictionary of a given data base.
Example: To search the term

GERMANY (FEDERAL REPUBLIC)

You must enter it as follows:

"GERMANY (FEDERAL REPUBLIC)"

2. Right-truncated access points

Instead of specifying a precise access point, you may just give a root. This technique, referred to as root searching or right truncation, allows you to search on leading sequences of characters. The system will automatically perform a logical OR operation between all access points having the specified root.

For example: FILM$ is equivalent to:
(FILM + FILM INDUSTRY + FILM LIBRARIES + FILM-MAKER+ FILM-MAKING +FILM-MAKING TRAINING)

3. ANY Terms

An ANY term is a collective term standing for a pre-defined set of access points. Whenever you use an ANY term in your search formulation, the system will automatically OR together all access points of the cluster associated with that ANY term.

4. Logical 'OR' (inclusive)

The logical OR is the class union operator. The result of a logical OR between two classes is the class obtained by merging the two classes, retaining common elements, if any, only once.

Thus, for example, to retrieve documents about the Benelux countries one could use the logical OR operator as follows:

BELGIUM + NETHERLANDS + LUXEMBOURG

5. Logical 'AND'

The logical AND is the class intersection operator. The result of a logical AND between two classes is the class containing only those elements which are common to both classes. Thus, for example, to retrieve documents generally about on-line information retrieval systems one might use the logical AND operator as follows:

ON-LINE SYSTEMS * INFORMATION RETRIEVAL

6. Proximity search operators

proximity: not more than 'n' words apart, where 'n' is the number of periods plus one. For example:

A . B	adjacent
A . . B	at most one word between A and B
A . . . B	at most two words between A and B etc.

$ proximity: exactly 'n' words apart, where 'n' is the number of dollars plus one. For example:

A $ B	adjacent
A $ $ B	exactly one word between A and B
A $ $ $ B	exactly two words between A and B

7. Logical 'NOT'

The logical NOT is the class exclusion operator. The result of a logical NOT between two classes is the class containing all the elements of the first class which do not also belong to the second class.

For example, a search request might concern documents about disadvantaged groups but excluding references to disadvantaged children. The query may be formulated as follows:

DISADVANTAGED GROUP - DISADVANTAGED CHILDREN

(iv) DISCUSSIONS ON *PR.MST*

dBase3+ uses fixed length records to store data, this means each record will always take up the length defined in the structure regardless whether the data is long or short, hence a lot of unused space in many records. However it is difficult to determine the most suitable field length for data with variable length so a programmer usually set the length as slightly greater than the longest data known to him. In contrast, CDS/ISIS maintains variable length record, i.e. the record length is just long enough to accept the data input hence no wasteage of space.

1) Speed consideration

dBase3+ is able to make fast retrieval on indexed fields using index files, but more often then not, users need to search using a term that is not the first word of a field. When such is the case, it was observed that to list the records which contain the word 'RADIATION' in the Title field using PRMASTER.DBF ,even after 15 minutes the search has not completed. But with CDS/ISIS which is able to index every word in theTitle (words to be excluded is put in the Stop word file) when same search is repeated, theperformance is remarkable; the relevant records are ready for display in about one second.

2) Space consideration

The different in space utilisation in CDS/ISIS & dBase3+ is very significant; In this exercise CDS/ISIS emerges as the clear winner in space saving. In this exercise, both database with identical data have this title field indexed andTable 5 illustrates the amount of space used in both databases.

Table 1:
Field Definition Table (F) for CDS/ISIS Database

Field Definition Table (FDT) Database: PR

Tag	Name	Len	Typ
_1	AUTHOR	45	X
_2	MINISTRY	5	X
_3	DEPT	100	X
_4	PRE_TITLE	20	X
_5	TITLE	254	X
_6	SERIES	55	X
_7	VOL	30	X
_8	AD	1	X
_9	A_R_DATE	9	X
_10	PLACE	25	X
_11	PUBL	60	X
_12	DATE	9	X
_13	FORMAT	10	X
_14	LANG	15	X
_15	COPIES	3	N
_16	TYPE	10	X
_17	AQSTAT	7	X
_18	DONOR	50	X
_19	COST	8	N
_20	MEMO	200	X
_21	NDATE	9	X

Table 2: Field Select Table for CDS/ISIS Database

ID	IT	DATA EXTRACTION FORMAT
1	0	V1
2	0	V2
3	0	V3
4	0	V4
.		
21	0	V21

TABLE 5:
Spaces used by dBase3+ and CDS/ISIS

PRMASTER.DBF	12,927,627 b	
TITLE.NDX	2,359,296 b	
TOTAL	15,286,923 b.	DBASE3+
PR.CNT	40 b	
PR.IFP	793,088 b	
PR.N01	9,828 b	
PR.N02	3,586 b	CDS/ISIS
PR.L01	131,224 b	inverted files
PR.L02	35,696 b	
Total (index)	973,462 b	
PR.MST	4,259,840 b	
Total	5,233,302 b	CDS/ISIS

Table 3:
STRUCTURE OF PRMASTER.DBF

```
. list structure
structure for database :  E:\dbase\data\prmaster.dbf
Number of data records:    14051
Date of last update     :  06/13/89
field   Field Name      Type         Width   Dec
1       AUTHOR          Character     45
2       MINISTRY        Character      5
3       DEPT            Character    100
4       PRE_TITLE       Character     20
5       TITLE           Character    254
6       SERIES          Character     55
7       VOL             Character     30
8       AD              Character      1
9       A_R_Date        Numeric        6
10      PLACE           Character     25
11      PUBL            Character     60
12      DATE            Character      9
13      FORMAT          Character     10
14      LANG            Character     15
15      COPIES          Numeric        3
16      TYPE            Character     10
17      AQSTAT          Character      7
18      DONOR           Character     50
19      COST            Numeric        8     2
20      MEMO            Character    200
21      NDATE           Numeric        6
```

Table 4:
Exporting EDBASE3+ File (PRMASTER.DBF) By Running DB3ISO.EXE

```
>DB3ISO

dBASE III to ISO exporter utility.
ver 2.70, written by Alejandro, 3/1987.

Select: [E]xport, e[X]it >E

dBASE III file name [.DBF]:PRMASTER
PRMASTER.DBF

Output ISO file [ISO.MST]:ISO.MST
ISO.MST

Input Field Selection Table file [.FST]: PR1.FST
```

Conversion effected by:
Mr. YOO Sang Nge
Systems Analyst
Computer Centre
Universiti Malaya

APPENDIX III
SEARCH ON 'DURIAN' FROM TITLE FIELD

003905
AUTHOR: THOMAS, A.V.
MINISTRY: KPU
DEPT: Forestry Dept., Peninsular Malaysia
TITLE: Malayan timbers - durian and bengang

005528
MINISTRY: KTANI
DEPT: Inst. Penyelidikan & Kemajuan Pertanian Malaysia (MARDI)
PRE_TITLE: A
TITLE: Guide to durian cultivation

005629
AUTHOR: KHO, Boon Lian
MINISTRY: KTANI
DEPT: Inst. Penyelidikan & Kemajuan Pertanian Malaysia (MARDI)
TITLE: Induced nutrient deficiency symptoms of durian seedlings

009775
MINISTRY: KTANI
DEPT: Jab. Pertanian Semenanjung Malaysia. Caw. Perkembangan
TITLE: Penyakit-penyakit durian

009780
MINISTRY: KTANI
DEPT: Jab. Pertanian Semenanjung Malaysia. Caw. Perkembangan
TITLE: Ulat daun durian

009794
MINISTRY: KTANI
DEPT: Jab. Pertanian Semenanjung Malaysia. Caw. Perkembangan
TITLE: Tanaman durian

009824
MINISTRY: KTANI
DEPT: Jab. Pertanian Semenanjung Malaysia. Caw. Perkembangan
TITLE: Ulat pengorek durian

009825
MINISTRY: KTANI
DEPT: Jab. Pertanian Semenanjung Malaysia. Caw. Perkembangan
TITLE: Penyakit cerana durian

002689
AUTHOR: UMAR Kayam
MINISTRY: KKBS
DEPT: Kem. Kebudayaan, Belia & Sukan
PRE_TITLE: "
TITLE: Penyatuan daya kreatif bahasa Melayu dalam kebudayaan dan bahasa di a lam Melayu": Syarahan ke XII pada 17 Dis., 1982 di Dewan Maktab Perguruan Perempuan Melayu Durian Daun Melaka.

012285
MINISTRY: KKBS
DEPT: Kem. Kebudayaan, Belia & Sukan. Jab. Muzium
TITLE: Durian: raja segala buah

APPENDIX IV

GOVERNMENT PUBLICATIONS HELD AT THE UNIVERSITY OF MALAYA

(In alphabetical order of the departments)

REC. NO		FORMAT	LANGUAGE
4778	Lapuran tahunan 1975/Annual report 1975	Orig.	BM/BI
*	Malaysian Industrial Development Authority		
4780	Annual report 1980	Orig.	BI
*	Min. of Trade & Industry		
4665	Guidelines to Hire Purchase Act, 1967	Orig.	BI
*	Min. of Trade & Industry. International Trade Div.		
4668	Handbook of export practice and procedures: a guide for Malaysian exporters	Orig.	BI
*	National Productivity Centre		
4683	Penyata tahunan/Annual review 1964	Orig.	BI
*	Perbadanan Kemajuan Pelancungan Malaysia/Tourist Development Corporation Malay		
4777	Lapuran tahunan dan penyata kira-kira/Annual report and statement of accounts 1972/1973	Orig.	BM/BI
4781	Lapuran tahunan dan penyata kira-kira/Annual report and statement of accounts 1974	Orig.	BM/BI
*	Pusat Daya Pengeluaran Negara		
4697	Courses for development of management: training programme 1978	Orig.	BM+BI
4696	Forum pengurusan v.1 n.4 (Dec. 1985)	Orig.	BM+BI
4698	Kursus-kursus untuk kemajuan pengurusan: jadual latihan 1982/Courses for development of management: training programme 1982	Orig.	BM+BI
4694	Produktiviti (July/Aug. 1985)	Orig.	BM+BI
4695	Produktiviti (Sept/Oct. 1985)	Orig.	BM+BI

REPORT ON THE GOVERNMENT PUBLICATIONS HELD AT THE UNIVERSITY OF MALAYA

(in alphabetical order of title)

	VOLUME	FORMAT	LANGUAGE	RECORD NO.
949	Bahaya dadah menurut kacamata Islam, Shah Alam, Selangor Selangor. Jab. Agama Islam [1988]	Orig.	BM	13012
950	Baiki-lah saloran dapor kamu, Kota Kinabalu, Sabah Sabah. Jab. Pertanian n.d.	Orig.	BM	13155
951	Baitulmal, [Kuala Lumpur] Majlis Agama Islam Wilayah Persekutuan. Baitulmal 1987	Orig.	BM	13840
952	Bakat '85 di Auditorium Besar, Angkasapuri pada 26hb. Oct. 1985 - 8.30 malam, [Kuala Lumpur] Jab. Penyiaran Malaysia [1985]	Orig.	BM	3559
953	Balai Seni Lukis Negara 1958-1988, Kuala Lumpur Balai Seni Lukis Negara 1988	Orig.	BM+BI	14025
954	Balai Seni Lukis Negara Kuala Lumpur, Kuala Lumpur Balai Seni Lukis Negara 1988	Orig.	BM	14024
955	Balai muhibah, Kuala Lumpur Jab. Perdana Menteri. Lemb. Perpaduan Negara			
	n.145 (April 1976)	Orig.	BM	8266
	n.198 (Dec. 1978)	Orig.	BM	8476
956	Balai muhibah, Kuala Lumpur Jab. Perdana Menteri. Jab. Rukun Tetangga & Perpaduan Negara			
	n.235 (1982)	Orig.	BM	5336
	n.238 (April 1982)	Orig.	BM	5337
	n.241 (July 1982)	Orig.	BM	5338
	n.242 (Aug. 1982)	Orig.	BM	5339
	n.244 (Oct. 1982)	Orig.	BM	5340
	n.245 (Nov. 1982)	Orig.	BM	5341
	n.246 (Dec. 1982)	Orig.	BM	5342
	n.247 (Jan. 1983)	Orig.	BM	5343
957	Balai muhibah, Kuala Lumpur Jab. Perdana Menteri. Jab. Perpaduan Negara			
	n.248 (Feb. 1983)	Orig.	BM	5344
	n.250 (April 1983)	Orig.	BM	5345
	n.251 (May 1983)	Orig.	BM	5346
	n.252 (June 1983)	Orig.	BM	5347
	n.253 (July 1983)	Orig.	BM	5348
	n.254 (Aug. 1983)	Orig.	BM	5349
	n.255 (Oct. 1983)	Orig.	BM	9354
	n.260 (Aug/Sept. 1984)	Orig.	BM	273
	n.264 (April/May 1985)	Orig.	BM	13806
	n.266 (Aug/Sept. 1985)	Orig.	BM	9351
	n.267 (Oct/Nov/Dec. 1985)	Orig.	BM	9352
	n.270 (April/May 1986)	Orig.	BM	13807
	n.272 (Aug/Sept. 1986)	Orig.	BM	8267

UNIFIED FORMAT FOR INFORMATION SHARING AMONG LIBRARIES AT THE LOS BANOS COMPLEX

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ABSTRACT

The Los Banos Complex or the University of the Philippines at Los Banos (UPLB) complex, situated some 67 kilometers south of Manila sprawls on more than 1,000 hectares of campus land, experimental fields, demonstration farms, and reserach areas. The UPLB complex has seven colleges and 25 research and training institutions and only 9 of these colleges/institutes have libraries in addition to the University Library. Most of these libraries use information systems which are independently developed and tailored to their particular needs. This has resulted in data incompatibility leading to limited access and use of available information. This paper discusses the resources and current operations of these libraries and the various formats and standards used in their bibliographic records. Data elements of three existing databases, namely: Acquisition, Cataloging and IASt were compared to determine their incompatibilities. Using a common software, CDS/ISIS, an attempt was made to propose a unified format that these libraries can use to exchange and share information within the complex. Although this is limited to UPLB complex at the moment, libraries/information centers of affiliate institutions are being considered for inclusion in the future.

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The Los Banos Complex

The Los Banos complex or the University of the Philippines at Los Banos complex, situated some 67 kilometers south of Manila sprawls on more than 1,000 hectares of campus land, experimental fields, demonstration farms, and research areas. In 1965, two colleges, four institutes and a national training center make up the Los Banos complex which aimed to contribute to the building of an efficient, dynamic agriculture in the Philippines and other Southeast Asian countries so their expanding millions can live a life of abundance, freedom and dignity.

At present, UPLB has seven colleges and 25 research and training institutes (Appendix 1). It has likewise affiliate institutions within and off the campus. Among these are the International Rice Research Institute (IRRI), the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD), the Forest Products Research and Development Institute (FPRDI), the Forest Research Institute (FORI), and the Education and Training Center of the Department of Local Government and Community Development of the Philippine Government.

Libraries at Los Banos Complex

The libraries at Los Banos complex can be grouped into libraries of UPLB and libraries/information centers of affiliate institutions.

Library cooperation on a limited extent is being practiced among these libraries due to inadequacy of library resources coupled with the increasing research activities. Researchers from these institutions are allowed to avail of library resources within library premises, subject to each library's rules and regulations.

This paper limits itself to libraries of the UPLB. These libraries are under the umbrella of one organization, so policies and regulations are not much of a problem. However, these libraries use information systems which are independently developed and tailored to their particular needs. This has resulted in data incompatibility leading to limited access and use of available information. Their library resources, current operations and the various formats used in their bibliographic records were surveyed. An attempt was made to propose a unified format that these libraries can use for better exchange and sharing of information within the complex. Once this is implemented, libraries of affiliate institutions within the Los Banos complex should be included in resource sharing, since these libraries are located within a limited geographical area whose users have similar level of interest and whose resources are complementary and supplementary. However, effective resource sharing becomes a reality if there is commitment, funding and great deal of goodwill. The acceptance of rationality behind resource sharing and demonstration of willingness to share are key aspects to successful sharing schemes.

Library and Information Exchanges within the Complex

Of the 7 colleges and 25 institutes at UPLB, only 9 have libraries, excluding the University Library. Of these, 3 are college libraries and 6 are institute/school/center libraries. Others have reading rooms while the rest depend on the University Library. The UPLB Library System includes the University Library or Main Library and Unit libraries, namely: College of Forestry (CF) Library, College of Economics and Management/Agricultural Credit and Cooperative Institute (CEM/ACCI) Library, Institute of Agrarian Studies (IASt) Library, College of Veterinary Medicine/Institute of Animal Science/Dairy Training and Research Institute (CVM/IAS/DTRI) Library, and Rural High School Library. These libraries are under the supervision of the University Librarian. Four other UPLB libraries, namely: the National Crop Protection Center (NCPC) Library, Institute of Plant Breeding (IPB) Library, National Institute of Biotechnology and Applied Microbiology (BIOTECH) Library/Reading room, and Postharvest Horticulture Training and Research Center (PHTRC) Library are directly under the supervision of the heads of the centers/institutes.

The University Library has the most extensive collection of agricultural materials in the country and is particularly strong in the plant and animal sciences. It also serves as the National Centers for the Information System for the Agricultural Sciences and Technology (AGRIS) and the ASEAN Food Post-Production Information Exchange Program (APEX). At the same time, it has CD-ROM AGRICOLA now ready for use. The current AGRICOLA disk covers 1984 to present and is updated quarterly.

All UPLB libraries use the Library of Congress Classification in the organization of their library materials, except for IPB Library which is to be organized yet. Seven libraries are doing indexing services. The outputs are either in book form or slips filed in boxes/catalog trays. These manually produced index to periodicals have been designed to meet the immediate needs of their users. These local periodicals being indexed are not included in commercially published indexes. The common data elements used in these indexes are : Author, Title of the article, Title of the Source, Volume/Issue Number, Pages, Date of Publication, and Subject Heading. Fifty percent of these libraries have Current Awareness Service in the form of Acquisitions List, SDI, etc.

Software and Hardware Available

Of the 10 libraries covered only the University Library, IASt Library and NCPC Library have microcomputers. Three software packages which run on microcomputers are available at the University Library and IASt Library, namely: CDS/ISIS (Computerized Documentation System/Integrated Set of Information Systems), Wordstar and DB III. The NCPC Library has Wordstar and DB III and is currently applying for the acquisition of CDS/ISIS.

At present, the University Library has embarked on computerizing the library processes. Using the CDS/ISIS software developed by UNESCO, it started with Acquisition and Cataloging in 1988. It is still in the experimental stage, starting with 1988 book orders, and inspite of some minor problems, the library's needs are being met so far. Circulation and Serials Control are also being considered for computerization. Lately, the IASt Library started to computerize its collection using CDS/ISIS. Several staff of NCPC Library are now being trained on CDS/ISIS at the Agricultural Information Bank for Asia, SEARCA, while the BIOTECH Library/Reading room intends to install a microcomputer using also the above software.

Since CDS/ISIS software is already available to some of these libraries, a common format should be adopted by these libraries to facilitate better exchange of information. At the rate these libraries are going, and with manageable data yet to work on, it is but timely that a unified bibliographic format be designed for compatibility purposes, easy access and maximum sharing of resources. With integrated effort, duplication of work will also be minimized.

CDS/ISIS is a generalized Information Storage and Retrieval System designed specifically for the computerized management of structured non-numerical data bases. One major advantage of this system is that the same set of computer programs is able to manipulate an unlimited number of databases each of which may consist of completely different data elements. Some features of CDS/ISIS require some knowledge of and experience with computerized information systems but once an application has been designed, the system may be used by person having little or no prior computer experience.

Although CDS/ISIS deals with text and words, it does more than text processing, even though it offers many of the features normally found in word-processing packages. This is because the text that CDS/ISIS processes is structured into data elements that are defined.

CDS/ISIS data base may be thought of as a file of related data collected to satisfy the information requirements of a given user community. It may be a simple file of addresses or a more complex file such as a library catalogue or a directory of research projects. In all these files, each unit of information is made up of elementary data elements (such as personal name, a title, etc.) which may be defined and manipulated in various ways:

- Define databases
- Enter new records
- Modify, correct and delete records
- Automatically build and maintain fast access files to each database
- Retrieve records
- Sort the records
- Display the records
- Print catalogues and/or indexes

CDS/ISIS consists of a set of programs performing the above various systems functions. Data elements are stored in "fields",each of which is assigned a numeric "tag" which may be thought as the name of the field. The collection of field containing all data elements of a given unit of information is called a "record". The unique characteristic of CDS/ISIS is that it is specifically designed to handle fields/records of varying length. A field may be optional (i.e. it may be absent in one or more records), it may contain a single data element, or two or more variable length data elements. In the latter case, the field is said to contain "subfields", each of which is identified by "subfield delimiter" preceding the corresponding data element.Furthermore a field may be "repeatable", i.e. any given record may contain more than one instance or "occurrence", of the field.

Unified Format for Information/Resource Sharing

With the foregoing discussion, resource sharing within the geographical area or within the complex is possible if there is a unified format among these libraries. Cooperation in the development of collection and services among libraries hope to provide users with all the information they need. Library cooperation and resource sharing mitigates the inability of libraries to meet user need due to limited resources. It works by coordinating and standardizing library records on demand.

Standards today take a variety of forms. They may be guidelines or models against which services, etc. are to be compared. Library standards fall into this category. Other standards take the form of rules for activities that should be applied as consistently as possible but which, by their nature, will not necessarily produce the identical results even when followed. Cataloging rules are of this type. A third class of standards are specifications or "technical" standards for which strict observance is necessary if sharing is to take place. Format structure, character sets and code list standards fall into this class which the paper also aimed to attain.

A format is the container which carries both data and data identifiers in a machine system. Data must be identified explicitly if it is to be processed and manipulated. The commonality of format allows some sharing of computer software; as computers get cheaper and programmers get more expensive, this sharing seems likely to spread.

Sharing of resources of any library must also include the expertise of the professional and non-professional staff. It is this amalgamation of people, processes, ideas, materials and money which form the substance of a library and can be described as its resources.

Since no library, even the largest, can hope to acquire and house every book that its patron might sometimes need, it is apparent that every library must depend to some extent upon some outside sources to provide what is lacking in its own collection to meet the needs of its patrons.

In any efforts at resource sharing there should be a clear statement of priority between the individual library and group. Each participant must think in terms of the group, otherwise the resource sharing system will not work.

On the other hand, resource sharing can bring great satisfaction and a sense of service to users, but it can also bring a sense of frustration and skepticism. Many are afraid to give what they possess. In most cases, it is the human factor that can spell success or failure in any library cooperative ventures whether at national or international level. There are other constraints under which resource sharing must operate such as limited financial resources, dearth of competent staff and delay in the delivery system because of distance factors.

In the case of UPLB libraries, librarians interviewed are amenable to having a unified format, with the University Library as the coordinator of these activities to minimize duplication of efforts and to maximize resources for compatibility purposes, easy access and better flow of information. Hopefully, libraries/information centers of affiliate institutions will soon join in this undertaking.

Proposed Unified Format

Table 1 shows the list of data elements in 3 existing databases, namely: Acquisition, Cataloging, and IASt.

Forty-three data elements are present in these databases. Eight data elements are common to the three databases; eight data elements are common to only 2 databases and 27 data elements do not have any similarity with the other databases. These 16 common data elements however, do not have common tags. Four of these common data elements are repeatable in one database but not in other 2 databases. Also, 4 data elements are subfielded in one but not in others. Incompatibilities in these elements need to be worked out as to which is to be followed for compatibility and standardization purposes. Since CDS/ISIS allows modification for data elements, unified format is attainable.

To facilitate the communication of bibliographic information among computer-based systems, large and small all over the world, is the aim of the Common Communication Format(CCF) which was established at the International Symposium on Bibliographic Exchange Formats in April 1978 and was sponsored by UNESCO/PGI.

Since one of the databases used tags for data elements common to CCF, it is but appropriate to adopt these for unification purposes. Those data elements of the existing databases which are common to CCF may be assigned the same tags or tag numbers as the CCF. Data elements which are repeatable in one data base should also be made repeatable in other databases. Likewise, data elements which are subfielded in another should also be subfielded in the other databases. Those data elements that are not with the CCF and those which may later be added should be assigned tags and field characteristics which are consistent with other upcoming databases of other libraries. As long as libraries have common or unified format in inputting data to the system, like determining access points, using standardized headings/subjects, etc., exchange of information can easily be facilitated, regardless of varying output formats libraries may need. Even if libraries will have their own indexes/catalogs, union catalogs/indexes can also be easily produced if these needed data elements are present in their databases. For LC using libraries, the International Standard Bibliographic Description would be of great help in making a common format for information exchanges among them.

Table 2 shows the proposed tags and field characteristics of the common data elements to be used by UPLB libraries already using CDS/ISIS as well as those intending to acquire one. These are still subject to further modification, depending on the needs and consensus of the involved libraries. For the purpose of this paper, only the 16 data elements are to be modofied at the moment while the 27 uncommon data elements may be retained and will serve as the switching format (Table 3).

Once the 16 common data elements are processed, with the tags of Acquisition and Cataloging databases converted to the proposed tags similar to IASt, using one of the functions of CDS/ISIS, the unified 43 data elements (Table 4) will serve as basis for other libraries to follow in creating their own databases.

Conclusions/Recommendations

The Los Banos complex is not only limited to UPLB but includes affiliate institutions as well. This proposed unified format could be presented to the information centers/libraries of these institutions to determine their interest, whether they truly accept the idea of resource sharing. Since these libraries are within a limited geographical area whose users have similar level of interest and whose resources are complementary and supplementary, it is with high hopes that these libraries outside of UPLB will be willing to cooperate and share because effective resource sharing only becomes a reality if there is commitment, funding and great deal of goodwill among participants.

Unified format among these libraries is necessary to ensure that common procedure, compatible guidelines, and standards are implemented by the individual agencies/institutions to make the most effective use of the exchange of bibliographic data.

Prohibitive organizational policies and library's rules and regulations should perhaps be reviewed for the benefit of the resource sharing group. Among affiliate institutions, PCARRD, SEARCA and IRRI (although not in the library but currently being used at their Computer Center for testing) have CDS/ISIS software package, thus, unified format among UPLB libraries could then be extended to Los Banos complex, then perhaps to National and International levels as well. It is an ambitious undertaking, but once it becomes operational at the Los Banos Complex, realization of higher undertaking may not be too far behind.

REFERENCES

1. Los Banos Today and Tomorrow. College, Laguna: University of the Philippines College of Agriculture, 1965.

2. University of the Philippines Los Banos. Catalog of Academic Programs 1987-1988. College, Laguna: UP Los Banos, 1987.

3. 1988 Annual Report of the University Library, UPLB, College, Laguna.

4. CDS/ISIS. Division of UNESCO Library, Archives and Documentation Services. [Paris:UNESCO, 1987].

5. Rather, L. J. "Exchange of Bibliographic Information in Machine-readable Form". Library Trends 25(January 1977):625-643.

6. Avram, H. D., S. H. McCallum and M. S. Price. "Organizations Contributing to Development of Library Standards". Library Trends 31(Fall 1982):197-223.

7. Rifianto, S. W. "Resource Sharing Activities among Fisheries Libraries under the Ministry of Agriculture in Indonesia: a Survey with Implications towards the Development of the Indonesian Fisheries Information System". MLS Thesis, University of the Philippines, 1988.

8. CCF: The Common Communication Format. Paris: UNESCO, 1984.

Table 1 - LIST OF DATA ELEMENTS IN EXISTING DATABASES(DB)

Data Elements	Tags/Field Characteristics Acquisition DB	 Cataloging DB	 IASt DB
Author	5(R)	5	300
Title	10	50	200
Publisher	15	65	400(Sa)
Publisher Address	20	60	400(Sb)
Price	25		465
Edition	30	55	260
Pub. Date	35	70	440
Copies	40		
Letter Order No.	45		
Date Ordered	50		
Date Received	55		
Fund	60		
Subject	65(R)	110	620
Recommended By	70(R)		
Library	75(R)		
Dealer	80		
Status	82(R)		
ISBN	85	90	
Accession Number	90	105(R)	615
Co-author		10(R)	301
Corporate Entry		15	310(Sa)
Acronym			310(Sb)
Editor		20(R)	
Introduction By		25(R)	
Foreword By		30(R)	
Sponsored By		35	
Translator		40(R)	
Illustrator		45(R)	
Collation		75	460

Table 1 (Continuation) ...

Notes	80	500
Contents	85	
Tracing	95	
Call Number	100	610
Source	115	025
Date Cataloged	120	
Type of Material		005
Type of Document		010
Mode of Acquisition		015
Conference		320
Degree		030
Volume		450
Series		480
Abstract		600

(R) - Repeatable (Sa) - Subfield a (Sb) - Subfield b

Table 2 - PROPOSED UNIFIED TAGS AND FIELD CHARACTERISTICS OF COMMON DATA ELEMENTS

Tag	Data Elements/Field Characteristics
200	Title
260	Edition
300	Author (R)
400	Place of Publication and Publisher
400a	Publisher (Sa)
400b	Publisher's Address (Sb)
440	Publication Date
615	Accession Number (R)
620	Subject (R)
90	ISBN
115	Source
301	Co-author (R)
310	Name of Corporate Body
310a	Corporate Entry (Sa)
460	Collation
465	Price
500	Notes
610	Call Number

Table 3 - TAGS/DATA ELEMENTS NOT COMMON TO EXISTING DATABASES

Tag	Data Elements
20	Editor
25	Introduction By
30	Foreword By
35	Sponsored By
37*	Translator
39*	Illustrator
40	Copies
45	Letter Order No.
50	Date Ordered
55	Date Received
60	Fund
70	Recommended By
75	Library
80	Dealer
82	Status
85	Contents
95	Tracing
005	Type of Material
010	Type of Document
015	Mode of Acquisition
030	Degree
120	Date Cataloged
310b	Acronym
320	Conference
450	Volume
480	Series
600	Abstract

* Renumbered

Table 4 - PROPOSED UNIFIED FORMAT FOR ALL THE EXISTING DATA ELEMENTS

Tag	Data Elements/Field Characteristics
200	Title
260	Edition
300	Author (R)
400	Place of Publication and Publisher
400a	Publisher (Sa)
400b	Publisher's Address (Sb)
440	Publication Date
615	Accession Number (R)
620	Subject (R)
90	ISBN
115	Source
301	Co-author (R)
310	Name of Corporate Body
310a	Corporate Entry (Sa)
310b	Acronym (Sb)
460	Collation
465	Price
500	Notes
610	Call Number
20	Editor (R)
25	Introduction By (R)
30	Foreword By (R)
35	Sponsored By
37	Translator (R)
39	Illustrator (R)
40	Copies
45	Letter Order No.
50	Date Ordered
55	Date Received
60	Fund

Table 4 (Continuation) ...

70	Recommended By
75	Library
80	Dealer
82	Status
85	Contents
95	Tracing
005	Type of Material
010	Type of Document
015	Mode of Acquisition
030	Degree
120	Date Cataloged
320	Conference
450	Volume
480	Series
600	Abstract

Appendix 1 - UPLB UNITS

1. College of Agriculture
    1. a. Dairy Training and Research Institute
    2. b. Farming Systems and Soil Resources Institute
    3. c. Institute of Animal Science
    4. d. Institute of Food Science and Technology
    5. e. Institute of Plant Breeding
    6. f. National Crop Protection Center
    7. g. National Plant Genetic Resources Laboratory
    8. h. UPLB-ASEAN Postharvest Horticulture Training and Research Center
2. College of Arts and Sciences
    1. a. Institute of Biological Sciences
    2. b. Institute of Chemistry
    3. c. Institute of Mathematical Sciences and Physics
    4. d. Learning Resource Center
    5. e. UPLB Limnological Station
3. College of Economics and Management
    1. a. Institute of Agrarian Studies
    2. b. Agricultural Credit and Cooperative Institute
4. College of Engineering and Agro-Industrial Technology
    1. a. Agricultural Machinery Testing and Evaluation Center
    2. b. Regional Network for Agricultural Machinery
5. College of Forestry
    1. a. Institute of Forest Conservation
    2. b. Forest Development Center
    3. c. Forestry Research and Extension Center
6. College of Human Ecology
7. College of Veterinary Medicine
8. Specialized and Training Units
    1. a. Center of Policy and Development Studies
    2. b. Museum of Natural History
    3. c. National Institutes of Biotechnology and Applied Microbiology
    4. d. National Training Center for Rural Development
    5. e. Research Management Center

BIBLIOGRAPHIC STANDARDS OF INDONESIA

Dady P. Rachmananta

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Abstract

As library science is considered fairly new to Indonesia, librarians are still trying very hard to gain a foothold for a bibliographic control standard which may hold up as the Indonesian standard. Even then, most librarians still use the AACR1 as the basis for their work up to now, which in some cases complies with the Indonesian condition. In coping with this situation, several institutions, including the University of Indonesia's library school, began developing their own standards in the hope that it would be implemented nationally. As it turned out, although based on the internationally acknowledged, they do not conform with each other in the sense that a generality should have been made instead of being independently created. It is for this reason that the Center for Library Development took an action by projecting manuals and standards during the seventies to be used by libraries in Indonesia, stressing on provincial libraries which are under the auspices of the Center, so that they would become the criterion by which other libraries in the province might follow. In the years that follow, the call for developing an Indonesian version of a communication format arose in the early eighties. This format for computerized bibliographic records, named INDOMARC, is expected to be most helpful in the distribution of cataloging data to libraries throughout Indonesia.

BIBLIOGRAPHIC STANDARDS OF INDONESIA

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Background

The history of bibliographies in Indonesia dates back to the 19th century and early 20th century during the Dutch colonial period. A noted Dutch bibliographer at that time whose painstaking effort had resulted into one of the most comprehensive bibliographies of the Netherlands East Indies ever made was G. Ockeloen. Regarded by many as a pioneer in the field, he succeeded in compiling a nearly complete listing of literature, monographs as well as serials, dating from 1870 to 1954. Despite all the difficulties encountered, he managed to accomplish no fewer than ten volumes of bibliography. Another prominent Dutchman of the same field, Jacobus Anne van de Chijs, had also gathered such materials but of an earlier period, ranging from 1659 to 1870. His work was in reality a precedent of Ockeloen's, but the latter seemed to be more distinguished since its coverage was more of importance in scope.

Although the description is simple, comprising only the "traditional" author, title and publisher statements, their work indirectly became the basis of the present Indonesian National Bibliography (BNI/Bibliografi Nasional Indonesia). The system contained no indexes and class numbers whatsoever, since no scheme for such had existed yet. Commencing 1 January 1953, the Ministry of Education decreed the founding of the Office of National Bibliography (KBN/Kantor Bibliografi Nasional). Its main task was to register all literature published within the country and to produce a national bibliography to be issued periodically. In the following years, several changes had been made on the structural organization of the KBN, which ended in 1975 when it was transformed into the Division of Bibliography and Deposit. As a subordinate of the Center for Library Development, this Division was wholly responsible for the production of the BNI, besides serving as a deposit library for Indonesian materials and as a regulatory agency for the National Union Catalog (KIN/Katalog Induk Nasional).

Similar difficulties, as experienced by the early bibliographers in dealing with the listing of printed materials, were partly due to the lack of coordination among publishers in the scattered provinces. It was true in respect of acquiring government documents because they were never publicly distributed nor sold. Another problem was that a legal deposit act had not been resolved yet, thus causing a snag to the flow of books to the Division. In spite of its limited resources, the Division had performed very well and its coverage kept increasing with each new edition of the BNI.

Aside from these issues, the Division had contrived means of cataloging rules especially for the need of Indonesian libraries. The rules of course had considerably changed from the traditional style that the early bibliographers used to the highly complex ones as established by the AACR (Anglo-American Cataloguing Rules). Even after the integration of the Division into the National Library in 1980, the local rules had also progressed in accordance with the existing condition as the National Library now emerges as the focal point of library "sophistication" in Indonesia. (The Division officially merged with three other big libraries in Jakarta, i.e. the Museum Library, the Social Sciences, Politics and History Library, and the Jakarta Provincial Library, to form the National Library).

The issues

As library science is considered relatively new to Indonesia, the librarian continuously struggles to gain a foothold for a bibliographic standard which may hold up as the Indonesian standard. Even then, most librarians maintain the AACR1 as the basis of their work up to now, which in several cases accommodate the Indonesian condition. Some of the rules offer the flexibility which we need, rather than the strictness and rigidity of the later rules which were developed mostly for automation purposes. In dealing with various publications and formats, the catalogers in many instances require a combination of both.

In coping with this situation, several institutions have devised their own standards in the hope that it would be implemented nationally. Still based on the AACR, they do reflect what kind of standards Indonesian libraries really need. Some have been produced by the University of Indonesia's library school (JIP/Jurusan Ilmu Perpustakaan), but for the most part these are intended entirely for teaching. For the practising librarians, they may somewhat be regarded as static and old-fashioned as they consist largely of theoretical elements. Nevertheless, as the basic element of library science, they are truly and magnificently thorough. Yet, we face the fact that certain institutions dealing with libraries are persistently producing their own manuals. Although based on the internationally acknowledged rules, they do not conform with each other in the sense that a generality should have been made instead of being independently made.

The standards

It was for this reason that the Center for Library Development began projecting manuals and standards during the 1970s to be used by libraries in Indonesia. Stressing on provincial ones which are under the auspices of the Center, it was expected that these libraries would become the benchmarks by which others in the provinces might follow. Standards such as for cataloging, geographic division, authority name, and so on, eventually started to appear. To date they are as follows:

- Extension and adaptation of notations on several sections in the *Dewey Decimal Classification* (DDC) specifically related to Indonesia
- Authority list of Indonesian names
- Indonesian cataloging rules
- List of uniform headings for geographical names and corporate bodies of Indonesia
- Abridged *Dewey Decimal Classification* and relative index of the 10th edition

Extension and adaptation of DDC

The *Extension and Adaptation*, which was a result of the work undertaken by the Technical Committee of the 1972 International Book Year in Indonesia, is basically the DDC variant exclusively used for the Indonesian region. It consists of the modifications of the sections of Islam (297), language and literature (499 and 899) and their regional subdivisions, and geography and history (915.98 and 959.8) also with their subdivisions.

Examples:	Geography	915.98	Indonesia
		915.9821	West Java (province)
		915.982141	Bandung (city)
	History	959.8	Indonesia
		959.88	Irian Jaya (province)
		959.887	Jayapura (city)

This local treatment has been developed considering the already widely-used Dewey scheme in Indonesian libraries. The need for an extension for local subjects was felt as the output of books was becoming higher and higher, and the provision for them in the scheme was understandably quite limited, e.g. Indonesian language and literature were provided only in

499.221 and 899.221 respectively. Besides, it was impractical because of its lengthy notation and it lacked details when subdivisions need to be added. So, the Committee decided to use 4X and 8X instead to replace those two provisions as the base numbers for language and literature treatment, and extend them according to the subdivisions devised by the Center for Language Development.

Examples:	Language	4X0	Indonesian language (*Bahasa Indonesia*)
		4X0.3	dictionary of the Indonesian language
		4X1	languages in Sumatra
		4X1.4	Minangkabau language
		4X5	languages in Bali and Nusa Tenggara
		4X5.1	Balinese language
	Literature	8X0	Indonesian literature
		8X1.4	Minangkabau literature
		8X2.001	Ancient Javanese literature
		8X5.1	Balinese literature
		8X6.3	Toraja literature

Even though the DDC was formerly intended to be used internationally, but for several sections, specifically local treatment, it lacked the adaptation from the location where this system originated. As shown by the scheme, subjects concerned with the United States have the most emphasis compared with other parts of the world. The same goes to the religion section (200) where Christianity has the biggest portion of treatment. Criticisms have been addressed to librarians from several honorable members of the Parliament (DPR/Dewan Perwakilan Rakyat) a couple years ago concerning the notation for Islam (297) in the DDC.

They, as members of the DPR's Islamic fraction, argued that the DDC did not contain enough notations for the country's religion; therefore, they proposed a broader and more specific provision to be made in conformity with the national requirement. Other remarks suggested that the whole DDC scheme be changed completely on the grounds that it did not reflect the Indonesian culture at all. But as we all know, this is unavoidable; no single existing system can ever satisfy the need of every individual at the same time, no matter how just that scheme may be. It was for these reasons, among others, that this standard was brought up, hopefully, as a plausible answer to the problem for a local treatment in the scheme.

Authority list

The authority list has three editions: the first was published in 1973, the second in 1978, and the third in 1985. Coverage was more or less the same but to the latter had been added quite a number of entries. The only one of its kind in this country, this list needs to be updated regularly to aid the catalogers in their work. Presently, we have a collection of files of author cards at our disposal, which is meant as guide cards for making author indexes in the BNI. By publishing this collection, ideally we could, at certain intervals, produce editions of authority lists. As the basis of the heading for an author, the real name in complete form is used; if not available, the name by which he or she is popularly and commonly known is chosen, which could either be his or her nicknames, pseudonyms, etc. The last element of the name is entered as entry element (except in certain cases). References are made from all other forms to the name being used in the heading, including from direct order, as Indonesians are accustomed to address each other by their first names.

Examples: Halim, Karim, 1918-
  x Atma Anoma (a pseudonym)
    Hanka, R.O. (a pseudonym)
    Karim Halim
    Sekarjadi (a pseudonym)

Gautama, Sudargo, 1928-
  x Gouw, Giok Siong
    Sudargo Gautama

This list, however, is limited only to authors of Indonesian origin. However, if a foreign author has changed his or her name to an Indonesian name, then the name would also be included with a reference made from the previous name (as illustrated by "Gautama").

Cataloging rules

Another step toward the application of Indonesian rules in cataloging is the improvisation of the AACR and ISBD into the Peraturan Katalogisasi Indonesia. This manual contains various cataloging rules pertaining to common usage in Indonesian libraries. Of great significance, the ISBD (International Standard Bibliographic Description) is the standard by which all books and serials and non-book materials alike are described so as to be understood internationally. Those who are at work in the cataloging field will find this manual useful; it contains not only the rules themselves, but also their examples included at the end.

Already in its second printing, it is distributed to institutional and public libraries in the country gratis, as are all other publications issued by the Center for Library Development. But sooner or later this book may become obsolete for the greater part of regional libraries have begun using the newer AACR2. As automation has just recently been introduced to libraries in Indonesia, the latest rule would be the choice since it seems to be more suitable for machine-readable formats. Differing mostly in punctuations from the earlier edition and in rules for corporate body headings, the AACR2 has been used for quite some time at the National Library with slight modifications in the local place names, such as:

- Irian Jaya (Indonesia : Province) modified to Irian Jaya
- Conference on Library Surveys (1977 : Bogor, Indonesia) modified to Conference on Library Surveys (1977 : Bogor)

Thus, only the well-known facts are utilized, and redundancies (which the AACR2 does not consider so) are omitted. ("Indonesia : Province" is left out because Irian Jaya is known to be a province; no other place or thing has such a name). However, the strict application of AACR2 in the National Library is inevitable where uniformity is required, such as in the case of the SEAPRINT project with its SEAMARC format, and the coming INDOMARC format, which we shall discuss later.

Uniform headings

The Center for Library Development has added another publication to its series of standards, entitled Daftar Tajuk Seragam untuk Nama-nama Geografi dan Badan Korporasi Indonesia (1981), concerning headings for geographical names and corporate bodies. For geographical names all member countries of the United Nations and their capital cities (in Indonesian spelling form) are included, as well as Indonesian place names from all levels of local government. Even though it contains place names outside Indonesia, the emphasis is really on local geography. Details rarely found in geographical publications do exist in this book, such as municipal or village names which sometimes fail to appear in the map. Although quite comprehensive in its listing, the only thing missing from it is the list of coordinates which distinguishes it from the National Gazetteer, published by the National Coordinating Board of Survey and Mapping (BAKOSURTANAL). It consists of many see and see also references from foreign names and unused forms of spellings.

Examples: Berlin Timur
x East Berlin
East Berlin lihat Berlin Timur
Greece lihat Yunani

Irak
  x Iraq
Kabul (Afghanistan)
Kemusu (Boyolali)
Tegal (Kabupaten)
Yogyakarta
  x Jogjakarta

Another important feature of this publication is a list of (central) government bodies and agencies with their subordinates. Some local ones are also included which may serve as examples for other regions in the country. The numerous changes in names which had occurred since the birth of the nation are not included yet. As it is customary perhaps to alter government structure and policies with every change of the Cabinet, those concerned with cataloging (Indonesian) corporate bodies have to keep track of their history since there have been many changes during all this time.

The State Secretariate in the past had published several directories of government bodies, but now most of them are already out of date. The problem often confronting catalogers is that such governmental changes (and their addresses) are seldom publicized or announced, and consequently they have to devise methods of their own for searching these peculiarities, which in fact are never easy to find. Nevertheless, national catalogers manage to come through the ordeal, yet look forward to having the edition revised and, if possible, supplemented periodically.

Subject headings

This list of subject headings is essentially the Indonesian version of the Sears´ List of Subject Headings. Originally, it was meant as an approach to the implementation of local headings for small public and school libraries as its title suggests, instead of using the English language one. Eventually, it now becomes a national standard for the application of Indonesian vocabulary in all types of libraries. First published in 1977, it was not only in use by small libraries but also by bigger ones like the National Library, which staff had some difficulties in determining subjects for the varieties of literature due to the list´s rather limited headings. In the second revised edition of 1986, besides the headings themselves (a large part adapted from the LC subject headings 10th ed.), class numbers based on the DDC 19th edition are added, designed to simplify the process of assigning subject headings and classification.

Plans to publish a third edition are under way, but again because of some technical and financial problems this project is held up for the time being. There was once an idea of using the Library of Congress Subject Headings (LCSH) for the National Library and translating them, which naturally would be more appropriate for such a big library; but of course it was never realized. Retaining the English version would "violate" its national mission to promote local headings, but on the contrary translating it would require a vast amount of manpower, time and money which definitely is out of the question. Aside from all these, the list nevertheless proves to be indispensable; in addition, it helps to stimulate our imagination on how to extend and improvise the headings and their subheadings, and create new terms whenever possible.

Abridged Dewey scheme

As the name implies, the abridged version of the Dewey scheme is none other than a simplified decimal classification of the 10th edition, translated with permission from the Forest Press. Intended primarily for students in library courses organized by the Center for Library Development, it assists beginners in using the system with the purpose of assigning class numbers. It simulates the original DDC so that it will give its users an overall view of the ins and outs of decimal classification. However, lack of English language proficiency remains the number one obstacle to using the English publication in their everyday work that constantly plagues most librarians and the public in general.

It was for this reason that motivated the Center to publish this handsomely-bound manual in 1983 (second edition) for the benefit of would-be catalogers. The schedules, tables and indexes are combined into a single volume, with an instruction for use and list of terminologies included. A glance over it would give the impression of complexity, but a closer look at its contents dismisses all bias opinions that clas ification is a very hard thing to comprehend. Therefore, it is recommended that students of library school use this book as an introductory stage for determining simple class numbers to books that need no long notations. Ultimately, as knowledge advances, the real DDC would take over as they undergo training in the real world of classification with complicated books to work out.

Other standards

Serial numbers

A serial is defined as a publication issued in successive parts and intended to be continued indefinitely. The very nature of serials, which are so often subject to change in title, in frequency, and in format has made necessary the development of a standard code for their identification. To be effective, the implementation of the code had to be international, while registration had to be initiated at the national level where the serials are published. The Indonesian national center for ISDS (International Serials Data System) is administered by the Center for Scientific Documentation and Information (PDII), which is responsible for promoting the use of the ISSN (International Standard Serial Number) and achieving total coverage in the registration of Indonesian serials.

The national center maintains a close contact with the International Center in Paris and the Regional Center for Southeast Asia at the Thai National Library in Bangkok. The International Center is responsible for establishing and maintaining, in machine-readable form, a reliable international register of serial publications. Records of Indonesian serials are sent here for inclusion in this file. The PDII, since 1976, allocates ISSN to Indonesian serial publications and focuses on covering all titles requesting serial numbers.

Scheme for the ISBN (International Standard Book Number) has started since 1985 and is implemented locally by the National Library which keeps in touch with the international agency for the ISBN in West Berlin. By assigning ISBN to their books, publishers will have an opportunity not only to promote and sell, but also help to facilitate the distribution of books worldwide. Records of their publications are kept both by the national agency in Jakarta and the ISBN agency ,in West Berlin, representing the International Publishers Association and the International Federation of Library Association (IFLA). Besides designating ISBN, the National Library also controls CIP (Cataloging in Publication) for new books. Copies of their title page and bibliographic information are forwarded to the Library to be cataloged, and are later sent back to the publishers to be included in the publications. Currently, there are about 200 publishers taking part in this scheme, government and commercial as well, out of which 60% are actively involved.

Spelling form

To simplify the work of catalogers in making author entries, the National Library has since 1982 adopted a standard albeit not yet imposed as a national one. Unwritten but formal as it may seem, it minimizes the varieties of "personal styles" in names which in one way or another generate unwanted confusion in filing and authority list as well. By applying a similar technique from the BISA (*Bibliographic Information on Southeast Asia*) project at the University of Sydney, all Indonesian personal names appearing in entries as access points are converted to the new spelling form of the Indonesian language. (This new spelling form, or EYD, introduced by the Department of Education and Culture in 1972, was the result of an agreement between the governments of Indonesia and Malaysia to establish a uniform spelling for their languages). Namely, the old *ch*, *dj*, *j*, *tj* are changed to *kh*, *j*, *y*, *c* respectively, including the Dutch form of *oe* to *u* that often appears in Javanese names.

Examples:	Achmad	*becomes*	Akhmad
	Djoeleha		Juleha
	Harjanto		Haryanto
	Mardjali		Marjali
	Soekotjo		Sukoco

Before practicing this technique, the BNI´s indexes contained many *see* references from the old spelling to the new one and vice versa, which in effect took up much space and were not considered so urgently needed. By eliminating this feature, the inconsistencies of individual authors could be treated uniformly. There was, however, the *see* reference made from a direct name order to a "supposed" surname, because customarily most Indonesians go by their first names rather than their last (except in certain ethnic groups, such as the Batak or Ambonese, where surnames or *marga* names are of prominent nature). Even official name directories, like the list of employees at the National Library, the telephone directory, or, ironically, the list of students attending the library school, are arranged alphabetically by first names. But, as we are all aware, the utilization of last names for entries is for library purposes only, as it has been the consensus, and does not by any means reflect the common practice in Indonesia.

National format

Library automation in Indonesia showed no sign of progress yet, but in the last few years a couple of libraries have begun experimenting with the application of computers to carry out their administrative work and literature searching. One of them is the Center for Scientific Documentation and Information (PDII). Strictly for internal use, their automation process is presently limited to compiling indexes of scientific journals, and making the information available through a selective dissemination scheme. Nevertheless, the National Library is already planning for computerization, and it is now in the phase of completing a communication format, namely, the INDOMARC.

This machine-readable cataloging (MARC) is one of the results of, as well as prerequisite for, library automation. The Indonesian implementation of the International Standard Format ISO 2709 is a format for bibliographic information interchange using magnetic tape or other machine-readable media. The call for promoting an Indonesian version of MARC first arose in 1981, in a meeting of the Consortium of National Libraries and Documentation Centers, Southeast Asia (NLDC-SEA) as part of a plan for cooperative development of an automated selected bibliography for Southeast Asia. Amongst the five nations, Indonesia was the only country which did not have a MARC format. However, the appearance of the Indonesian format was delayed by some insurmountable obstacles.

As INDOMARC was initiated partly as an endeavor towards cooperation between the Southeast Asian nations, it resembled, therefore, the MARC format for Southeast Asia (SEAMARC) in use at that time. (It is intended that the INDOMARC format will be most closely compatible with USMARC). During the first half of the 80s, as part of the SEAPRINT (an acronym for Southeast Asian imprints) project undertaken by five national libraries in the Southeast Asia region, Indonesia was then responsible only for completing input sheets which were based on the SEAMARC format. Through the National Library, they were periodically sent to the project's regional center at the Universiti Sains Malaysia, Penang, to be processed and input into the computer. This project, which has been terminated due to lack of funding, had the objective of projecting an interlibrary exchange network among its members and a selective regional listing of national imprints using the computer.

In whatever way, through this project, there was a possibility of producing the BNI as a by-product of the regional listing, and this could be achieved by slightly modifying the regional system. It was expected from this very project that we should gain a lot of experience by taking full advantage of these Indonesian and foreign standards as well. Thus, it should enable us to narrow the gap between the changing rules and the ones we have at home in this ever-evolving world of machine-readable format and, eventually, disseminate this knowledge to librarians and those concerned throughout the country.

The National Library plans to use INDOMARC to create bibliographic records for the Indonesian imprints in BNI. It also plans to use this format for cataloging other titles added to its collections. (Fortunately, the transliteration of vernacular scripts does not pose a problem because the Indonesian language consists only of roman scripts; even though works in old Javanese and Balinese scripts are collected at the National Library, they are readily available also in the transliterated and translated form as well). These records together will form the basis of a national data base of bibliographic records. This data base will be the foundation of a network for sharing library information. It is hoped that other libraries in Indonesia, as they acquire the necessary hardware and software suitable for operating a bibliographic data base, will also use the INDOMARC format to catalog library materials in their collections, and eventually contribute their records to the national data base.

Epilog

The bibliographic standards discussed here are considered to be in the preliminary stages of development. It is for the benefit of librarians that they are initiated so as not to be dependent on foreign standards alone, since most of the latter turned out to be rather difficult for the average users. However, this handicap in (English) language skill is, a matter of fact, the driving mechanism behind all the issues that compelled them to formulate standards of their own. In use by the National Library and most, if not all, libraries within the administrative activities of the Center for Library Development, they are by national standard considered excellent and comprehensive in contents and scope. This achievement indeed has a profound effect on later improvement of those tools and other proposed ones. Newer editions with better typography and stronger bindings are among the suggestions put forward by users for heavy-duty purposes. Though neither commercially distributed or sold to individuals, they may otherwise be obtained free of charge by writing to the publisher.

Bibliography

Format MARC Indonesia (INDOMARC) untuk buku. Jakarta: Perpustakaan Nasional R.I., 1989.

Sayangbati-Dengah, W.W. Bibliografi Nasional Indonesia. Jakarta: Perpustakaan Nasional, 1982.

Tairas, J.N.B. Tindjauan bibliografi Indonesia. Bulletin Perpustakaan dan Dokumentasi. 1:2-11, Jan. 1972.

Tjoen, Mohd. Joesoef and Pardede, S. Perpustakaan di Indonesia dari zaman ke zaman. Djakarta: Kantor Bibliografi Nasional, 1966.

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